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Veterinary Science and Agriculture.*

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The mere fact that I have travelled more than 6,000 miles to come and deliver this address here to-day, is perhaps sufficient excuse for me to make a few personal remarks before embarking on the task which I have set myself. When I received the cable from the Secretary of the British Association stating that the Council invited me to become President of Section M for this year, the feeling of bewilderment which I experienced was only partly dispelled by the feeling of deep gratitude for the great honour that had befallen me. I accepted the invitation without sufficiently contemplating the consequences, but I did so with a firm belief in the old German saying:

"Wem Gott gibt ein Amt,
Dem gibt Er auch Verstand."

The honour which has been conferred upon me is not only personal. In asking me to be President of this Section you have honoured, not an individual, but a country; on behalf of South Africa, therefore, I tender my sincere thanks to you. I realise that it is not customary for the British Association to go beyond the shores of these islands for Sectional Presidents (nor is there any need to do so!) This year you made an exception, and I regard it as a great compliment to the country of my birth.

I am further very sensible of the honour you have done my profession by calling me to this high office. It is the first time that a veterinarian has occupied this chair, and the sincere thanks of myself and my colleagues are due to you for this signal honour.

A year ago this Association met in South Africa and many of you then had an opportunity of getting acquainted with the country, its problems and its people. Agriculturally you saw a country which is rapidly discarding the patriarchal and primitive methods of yesterday for the scientific methods of to-day. You saw our many problems and the necessity of applying all available scientific knowledge to their solution. You saw a people anxious to learn from the old parent countries in Europe or the countries across the Atlantic. Our thirst for knowledge was partly satisfied by your visit last year, and I wish to give you the assurance now that that visit has been of inestimable and lasting value to South Africa in that it stimulated unprecedented interest in scientific work and scientific workers.

Not the least among the problems which you saw were those connected with stock farming. It is doubtful whether any country in the world has more problems confronting the stock owner than South Africa. Most of the stock diseases present in European countries are also to be found in the temperate climate of South Africa and, in addition, the majority of the diseases of tropical Africa thrive within its borders.

It is perhaps for this reason that veterinary science has made such rapid strides in South Africa. The need for scientific research was first brought home to the farmer and statesman alike when rinderpest invaded South Africa 35 years ago and killed off almost the entire cattle population; and the ravages of horsesickness, bluetongue, heartwater, nagana and scores of other diseases further emphasised the necessity of scientific research. Fortunately for South Africa (and perhaps for veterinary science) the right men were forthcoming to undertake this research and to-day, although many problems still await solution, the position of the stock-owner in South Africa is by no means hopeless.

The prominent position which veterinary research occupies in the scientific life of South Africa to-day, and the valuable practical results which have been obtained in this field of work, have encouraged me to choose as the subject of my address: the rôle which veterinary science plays in the agricultural development of a country. For obvious reasons my remarks will be confined almost exclusively to the live stock side of agriculture in the wider sense. And for equally obvious reasons most of my examples will be quoted from South Africa.

In his brilliant Presidential address to this Section in 1928, Dr. J. S. Gordon directed attention to the supreme importance of the live stock industry in the agricultural economy of every unit of the British Commonwealth of Nations. He came to the conclusion that the best means to improve this industry was the increased use of pedigree sires and the elimination of scrub bulls. He also emphasised the need for further research along the following lines: (1) Animal Nutrition, (2) Animal Diseases, (3) Animal Breeding, and (4) Marketing. Now all these subjects, with the possible exception of Marketing, fall within the scope of the veterinarian, and I shall attempt to show how modern veterinary science is actually advancing along each of these lines.

But before dealing with these specific problems, it is necessary to say a few words about the development which has taken place in veterinary science itself. Looking back over the last 140 years, we see that we have indeed travelled a long way since the first veterinary college in Britain was established in London in 1791 with the object of placing "the study of farriery upon national and scientific principles." The gulf which divides the modern veterinarian and the eighteenth-century farrier is at least as wide as that dividing the modern surgeon and the eighteenth-century barber.

During the earlier half of the nineteenth century very

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little progress was recorded in veterinary science. In regard to the origin of disease much ignorance and superstition prevailed. The "miasmatic theory" was called upon to explain the spread of epidemic and epizootic diseases. Indeed, it seemed as if little progress had been made since the fourth century after Christ when the Greek writer, Chiron, maintained that glanders and similar diseases were caused by the "pestiferous hot southerly wind from Africa."

However, great strides were made during the latter half of the nineteenth century. The work of Louis Pasteur and Robert Koch cleared up the ætiology of some of the most important infectious diseases. And the later researches of David Bruce, Adophe Laveran, Theobald Smith and others, added further brilliant chapters to our knowledge.

Since the beginning of the present century the growth of veterinary science has been phenomenal. In every branch of this science there have been remarkable developments. Indeed, it may be said that a new veterinary science has arisen unobserved by the general public. A quarter of a century ago the veterinarian was looked upon as a moderately useful though obscure member of the community, whereas to-day he is regarded as an essential factor in the economic machine of the State. A generation ago the value of a veterinarian was judged by his ability to cure a lame horse or an ailing dog; to-day the veterinary profession is judged by the measure of success which attends its efforts to keep its country free of epizootic diseases. Formerly the work of the veterinarian was individual, to-day it is national.

In this transformation of veterinary science the British Dominions and Colonies played no unimportant part. The veterinarians who had migrated to those countries and taken with them the stock of knowledge which they had obtained at the European veterinary schools, found themselves confronted with new problems which required solution. Research work on a large scale became necessary. Novel methods of attacking disease had to be devised. The farmer soon came to realise that his very existence depended on the protective measures devised and enforced by the veterinary staffs.

I propose in the short time at my disposal this morning to review briefly some of the most notable achievements of veterinary science in recent years, and to indicate how the work of the veterinarian has become interrelated with that of workers in other branches of science.

It will be convenient to divide our subject into sections and to quote a few examples from each of these.

Let me begin with the largest and most important field of work of the veterinarian, viz.:—

A. Animal Diseases.

And let me group this subject according to the ætiology of the various diseases.

1.—*Trypanosomiases.*

Probably no other single group of disease-producing organisms has retarded the agricultural development of the continent of Africa more than that of the trypanosomes. If the cattle population of Africa be estimated at about 40 million head, it is quite safe to say that this number could easily be doubled if the danger of trypanosome infection were removed. In Nigeria, for instance, only a portion of the drier Northern Provinces is suitable for cattle ranching; the much more fertile Southern Provinces are practically devoid of cattle on account of the ravages of trypanosomiasis. Similar conditions obtain in almost every territory in Africa (except the extreme south). The soil is fertile, grazing is plentiful, the climatic conditions are favourable, but the presence of tsetse flies and trypanosomes renders cattle farming impossible.

Fortunately, we can record considerable progress in this field of work during recent years. The problem has been attacked along two lines mainly. A direct attack has been launched against the parasite by means of drug treatment; and an indirect attack on the disease has been made through a campaign against the transmitter, the tsetse fly. It may be stated at once that the third line of attack, namely, the immunisation of animals against infection, has not yielded very promising results.

In regard to drug treatment, a tribute should be paid to the early pioneers, especially Livingstone, who found that arsenic had a marked effect on trypanosomes in the blood of animals. Untiring efforts on the part of later investigators (Ehrlich and many others) have bought to light a large number of active preparations, notably arsenic and antimony compounds and various dyestuffs. Still more recently further drugs have been added to the list, and these promise to give the stock farmer in infected areas a practical means of combating the disease and keeping his animals in good health and condition in spite of repeated infection. Among these drugs special mention should be made of *tryparsamide*, *Bayer* 205 (Germanin, Naganol) and *Antimosan*. The two former have also given excellent results in the treatment of human sleeping sickness, and the last-named, which has quite recently been tried on a fairly extensive scale at Onderstepoort by Parkin, and in Tanganyika Territory by Hornby, has proved to be more effective in the treatment of *Trypanosoma congolense* infection than any drug previously used; at the same time the simple (subcutaneous) administration of this drug renders it more practical than those preparations which have to be given intravenously.

In all this work the veterinarian has kept in close touch with the medical man, on the one hand, and the synthetic chemist on the other.

In the campaign against the tsetse fly the basis of co-operation has had to be broader still. Entomologists, botanists, ecologists, medical men and veterinarians have all combined to study this problem. Time and space prevent me from discussing in detail the progress which has been made in this work. But attention should be directed to the very valuable investigations carried out in Tanganyika Territory by Swynnerton and his co-workers. The volume of our knowledge of the life-history and habits of the various species of tsetse flies is being added to year by year, but the rate of progress is not commensurate with the importance of the problem. Governments must realise that the tsetse fly is holding up the advancement and civilisation of Africa. Money and men should be made available for this work, however "theoretical" it may appear. It is the study of precisely these "academic" aspects of the bionomics of the tsetse fly, which will probably ultimately lead to the solution of the trypanosome problem.

Only a few words need to be added about those typanosome infections which are carried mechanically by ordinary

biting flies. The most important of these is " Surra " in India and other countries. Great advance has been made since September, 1880, exactly 50 years ago, when Evans, the " Inspecting Veterinary Surgeon " of the Government of Madras, was sent to the Punjab to investigate this disease, and when he succeeded, in a remarkably short time, in discovering its cause. Since then much work has been done, especially by Nieschulz in the Dutch East Indies, on the transmission of this disease, and good progress has also been made in regard to the drug treatment.

It is with great satisfaction that the fact can be recorded that this veteran of science, Griffith Evans, the discover of the first pathogenic trypanosoma, is still alive to-day, with more than four score years and ten to his credit, and is able to watch, from his home in Bangor, the progress which has been made in this field of work.

One further trypanosome disease should be mentioned here, namely, Dourine. Known for about 150 years, this disease has been responsible for very heavy economic losses to horse breeders in Europe and other countries. With the aid of modern methods the disease was eradicated from most of the closely settled and well organised Western European states. But in the vast open spaces of Canada and other countries, its eradication proved to be a much more difficult problem. It was only when Watson in Canada succeeded in perfecting a delicate diagnostic test for the detection of the infection, that the eradication of the disease could be attempted seriously, and the results of the subsequent campaign in Canada have been entirely satisfactory. It should be added that Watson's success has stimulated further research into the problem of diagnosing other trypanosome infections by serological methods. A fair amount of success has attended these efforts and quite recently Robinson at Onderstepoort has reported further progress in the serological diagnosis of *Trypanosoma congolense* infection.

2.—*Piroplasmoses.*

Under this heading are included diseases like redwater or Texas fever of cattle, biliary fever of dogs and horses, " gallsickness " or anaplasmosis and East Coast fever of cattle.

Their ætiology was completely obscure until Theobald Smith and Kilborne in America, in a series of brilliant researches extending over the years 1888 to 1892, succeeded in elucidating the nature of the first-named disease. Not only did these investigators discover the causal organism in the blood of infected cattle, but they also proved that the disease was transmitted by ticks and that the infection passed through the egg of the tick from one generation to the next. All this was completely new to science; it was the first time that the transmission of a mammalian disease through an invertebrate host had been proved experimentally. This contribution to science by two veterinarians is worthy of special note.

Theobald Smith, like Griffith Evans, is still able to-day to watch the progress of the work which he initiated many years ago. In the case of " redwater " great advances can be recorded. The direct method of attack is eminently satisfactory, thanks to the discovery by Nuttall and Hadwen in 1909 that the drug Trypanblue has a specific action on the parasite of redwater of cattle and biliary fever of dogs. The treatment is so successful that the disease has lost much of its terror since the discovery of the value of this drug.

In some of the other " piroplasmoses " (in the wider sense of the term), no such simple treatment is available. As a matter of fact, in the case of anaplasmosis and East Coast fever of cattle, no satisfactory method of treatment is known. In these cases, therefore, prevention should be aimed at.

Various methods of preventive inoculation against *anaplasmosis* have been advocated. In South Africa Theiler, who originally described the parasite (*Anaplasma marginale*) causing anaplosmosis, found a second species or variety (*Anaplasma centrale*) which differed from the first, not only in regard to its relative position in the red blood corpuscle, but also as regards its virulence. It was found that the injection of blood containing *Anaplasma centrale* invariably produced a mild infection, even in imported cattle, but this infection conferred sufficient immunity to protect animals against the fatal *Anaplasma marginale* infection. This method of immunisation has been practised in South Africa for nearly twenty years and has been the means of saving thousands of animals. The *Anaplasma centrale* strain has also been sent to other countries where the same method has been used with good results.

Of the diseases mentioned in this section, East Coast fever is the most formidable because of the very high mortality attending it. This disease must have cost South Africa several million pounds since its first appearance nearly 30 years ago. The loss to the country has been partly indirect through the costly organisation which it is necessary to maintain to fight the disease.

It is impossible in this brief review to discuss the methods employed in the eradication of East Coast fever, or the many practical difficulties encountered in this campaign. For our purpose it is sufficient to state that the dipping of cattle in an arsenical bath has proved to be a very valuable aid in the fight against East Coast fever or any other tick-borne disease.

In South Africa dipping has been practised since the beginning of this century, and has now become an integral portion of the daily routine of farming. No up-to-date stock farm can be found to-day without at least one dipping tank. The dip was originally intended chiefly as a weapon in the fight against tick-borne diseases, but to-day it is largely used merely to keep the cattle free of ectoparasites, quite apart from the fact that some of these parasites may be carriers of disease. The necessity of keeping cattle free of ticks is obvious to anyone who has lived in a tropical or semi-tropical tick-infested country. As an illustration, the fact may be mentioned that on the Natal Coast, before the days of dipping, it was rare to see a cow with more than one or two teats intact, and it was impossible to raise more than about 30 per cent. of the calves; whereas to-day, thanks to the dipping tank, all the udders and teats of the cow are healthy and it is nothing unusual to raise 95 per cent. or more of the calf crop. Even if all the tick-borne diseases should now disappear, the majority of farmers in South Africa would continue to dip their animals regularly.

The extent to which dipping is practised to-day may be gauged by the fact that there were in the Union of South Africa in 1929 more than 13,500 dipping tanks. If

we assume that the average dipping interval is eight days (the actual intervals are three, five, seven or fourteen days), and that the average number of animals that pass through a tank on a dipping day is 200 (frequently the number is as high as 4,000), we find (calculating on this very conservative basis) that about 120,000,000 cattle passed through the dipping tanks last year.

Returning now to the campaign against East Coast fever, it may be said that by means of carefully controlled dipping and hand-dressing of cattle, combined with quarantine restrictions, and slaughter of infected herds in the case of isolated outbreaks, it has been possible to keep the disease well under control. The hope seems justified that the disease will be eradicated completely from South Africa and Rhodesia before many years have passed. That this would be a great boon to the cattle industry of these two countries needs no further emphasis.

In the United States of America, where Texas fever (Redwater) is the only serious tick-borne disease, an attempt is being made to eradicate the transmitter *Boophilus annulatus*, completely by means of dipping. Large areas have already been cleared of these ticks, and the economic advantages to which these areas are entitled after being declared tick free more than compensate for the expenses incurred.

3.—*Virus Diseases.*

The vast sums of money which have been spent in this country during the last few years on the eradication of foot-and-mouth disease should convince even the layman of the importance of this group of diseases.

In the olden days it was rinderpest which caused the severest losses. It has been calculated that the losses in Europe during the eighteenth century amounted to 200 million head of cattle. The disease made its appearance in England in 1865. A Royal Commission was appointed and its report is of value to this day. Later on, improved methods of eradication and prevention were evolved, and to-day most countries are free of rinderpest. However, in the Far East and in Central Africa the disease is still prevalent, and causes very serious losses.

Two recent outbreaks of rinderpest, one in Belgium in 1920, and the other in Australia in 1923, both of which were eradicated completely within a few months, have again shown how far veterinary science has advanced during the last century and how much a country owes to an efficient veterinary service.

South Africa has been free of the two diseases just named for many years. But there are several other virus diseases which play a very important rôle. Among these "horsesickness" and "bluetongue" of sheep are perhaps the most important. An extensive study of the former disease by Theiler and his co-workers has yielded some very valuable results, but the problem of horsesickness cannot be said to be solved. At present a method of immunisation with hyperimmune serum and virus is practised, and this method has given excellent results in mules. About 4,000 mules are immunised annually, and it has been stated that if the Onderstepoort Laboratory had produced nothing else except this method of immunising mules, its existence would have been justified.

In horses the method has not been quite so satisfactory. A method of immunisation of horses which would be safer, simpler, cheaper and more reliable than the present method, would be of inestimable value to stock farmers right throughout Africa. Recent work at Onderstepoort with a formalised vaccine (by Du Toit and Alexander), seems to justify the hope that such a method will be found. The work was inspired by the brilliant researches of Dunkin and Laidlaw in England on another virus disease, distemper of dogs.

The second important virus disease of South Africa is bluetongue of sheep. The disease is of great economic importance and would have been a very serious hindrance to the sheep farmer had it not been for the fact that Theiler discovered a simple method of vaccination by means of which the losses from the disease can be reduced to a negligible quantity. Every year two to three million doses of this vaccine are issued to the farmers, and the ultimate saving to the country must be enormous.

Another African disease, "heartwater" of cattle, sheep and goats, should be mentioned here. Formerly this disease was classified as a virus disease, but a few years ago Cowdry, working at Onderstepoort, found that it was caused by a Rickettsia. It is possible that this discovery may give us a clue to a successful method of combating this serious disease. In the meantime, all that can be done is to dip the animals to eradicate the tick which transmits the disease.

Of the many other virus diseases of animals only one more need be referred to here, namely, rabies. This most dreaded of all human and animal diseases has been eradicated from many countries, and is being kept out by strict quarantine measures. In 1918 the disease was introduced into England with a dog which had been smuggled in in an aeroplane. Strict measures were put into force and in a comparatively short space of time the disease was stamped out completely. Methods of preventive inoculation of dogs in countries where the eradication of the disease is very difficult, have been tried on a large scale. The results have, on the whole, been very good, but it is too early to predict the future scope of these methods.

Before leaving this group, it is necessary to point out that virus diseases are not confined to our domestic animals, but are encountered in human beings, on the one hand, and in the lower animals (*e.g.*, insects) and in plants, on the other. Co-operation between medical men, veterinarians and plant pathologists, therefore, becomes imperative. The subject is claiming the attention of many scientific workers and great developments may confidently be expected in the future.

4.—*Bacterial Diseases.*

Of the host of bacterial diseases only a few need be mentioned here.

The deadly glanders, which was known before the time of Christ and which, 25 years ago, still caused severe losses amongst horses, and constantly threatened the human population, has now been practically eradicated from all civilised countries, thanks to the accuracy of the diagnostic tests which are used to identify the disease.

Another disease which at one time was responsible for very serious losses and which has now practically disappeared, is pleuro-pneumonia (lungsickness) of cattle. In the year 1860 about 187,000 head of cattle are stated to have died in Great Britain of this disease; and the mortality in other European countries at that time was correspondingly high. Towards the end of last century

the disease was stamped out in Britain and to-day the greater part of Europe is free of the disease. It may be added that South Africa, in spite of the fact that neighbouring countries are still infected, has been free of lung-sickness since 1915.

Anthrax is almost universal in its occurrence, but it is much more formidable in the tropics and sub-tropics than in the colder countries of Europe. In the latter countries it appears in sporadic cases, whereas in the former it behaves like any epizootic disease. For this reason its suppression in these countries becomes a matter of great urgency. The problem has been tackled on a big scale in Australia and South Africa by means of preventive inoculation. In the former country the disease has nearly been stamped out, and in South Africa the campaign is carried on with great vigour. The excellent results obtained with the spore vaccine, now employed, promise complete success.

The position in the warm countries in regard to quarter evil (black quarter) is much the same as with anthrax. The disease appears almost in epizootic form and preventive inoculation on a large scale becomes necessary. Very satisfactory results have been obtained in South Africa both with a germ-free filtrate and with a formalised vaccine.

Only one other bacterial disease can be mentioned here, namely, tuberculosis. In 1901, Robert Koch, who about 20 years previously had discovered the cause of the disease, startled the scientific world by announcing to a Tuberculosis Congress in London that human tuberculosis and bovine tuberculosis were two distinct diseases which were not communicable from the one species to the other. Unfortunately, this statement proved to be wrong. We know to-day that human beings do contract bovine tuberculosis, and for this reason most civilised countries adopt measures for the suppression of the disease in cattle. The United States and Canada are leading the world in this respect and have spent millions of pounds in compensation for the destruction of tuberculous reactors. Denmark, Germany, England and other countries are also doing much and have achieved a large measure of success in their efforts to supply to the population milk and beef free of tubercle bacilli. But very much remains to be done. In human beings the mortality from tuberculosis is still high in all countries, and a considerable percentage of the deaths must be ascribed to the bovine strain of the organism. The disease in cattle *can* be stamped out provided enough money is made available.

Recently great interest has been shown in the attenuated strain of tubercle bacilli produced by Calmette and Guerin of the Pasteur Institute. Experiments in which it is attempted to immunise children and young animals, with this strain, are in progress throughout the world. It is sincerely hoped that all this work will prove that the method of Calmette and Guerin has given us yet another weapon against this insidious disease.

5.—*Internal Metazoan Parasites.*

The only group that need be mentioned in this brief survey are the worms. These parasites have become more and more important and to-day they actually constitute the "limiting factor" in successful sheep farming in many parts of the world. This subject forms a highly specialised science of its own, the science of helminthology; in which many notable successes have been achieved in recent years. It is almost unnecessary to add that this subject demands the close co-operation of zoologists, medical men and veterinarians.

Amongst the trematodes the liverflukes and schistosomes of sheep and cattle deserve special mention. The latter group is not of very great economic importance, but is of great interest because of the close relationship between the disease in animals and schistosomiasis (Bilharzia disease) in man. Le Roux, of Onderstepoort, has shown recently (1929) how the campaign against the human disease can benefit from further study of the animal disease. This is particularly true of the method of treatment with tartar emetic and other modern drugs.

Liverfluke disease of sheep and cattle is a very serious problem in many countries in different parts of the world. In Germany, Nöller has organised what may be termed a national campaign against these parasites, and has achieved a large measure of success. Various preparations have proved to be very efficacious in the treatment of infected animals, and the application of modern principles of hygiene has reduced the incidence of the snails which act as intermediate host of both groups of worms just mentioned.

Generally speaking, the nematodes or round worms are far more serious than either the trematodes or cestodes (tape worms). In many countries where sheep farming is conducted on an extensive scale, the infection with various nematode worms seriously threatens the industry. One or two examples may be mentioned.

The ordinary stomach worm of sheep (*Hæmonchus contortus*) is worldwide in its distribution and is the cause of very severe losses. Better farming methods will undoubtedly improve the position, but in the meantime farmers look to the veterinarian to rid their sheep of these deadly parasites. Various chemicals have been tried with varying degrees of success, but perhaps nowhere has the success been so marked as in South Africa, where, as a result of the researches of Theiler, Veglia, Green and others, a method of treatment was recommended which has proved the salvation of many sheep farmers. The method consists of the accurate dosage of a mixture of arsenite of soda and copper sulphate; and the extent to which this method has been applied may be gauged from the fact that at present some 25 million doses of the mixture are issued annually from Onderstepoort. The method is not perfect, but it has certainly been a great factor in making sheep farming a success where otherwise it would have been a dismal failure.

There are many other nematodes which threaten the sheep industry. *Œsophagostomum columbianum* and various species of *Trichostrongylus* are amongst the most important in South Africa. Treatment in these cases is not simple, but it is hoped that the work now proceeding at Onderstepoort (Mönnig and Le Roux) and in many other parts of the world (notably in the United States of America) will yield practical results.

One further step must be emphasised here. The menace of worm infection has become so great that no sheep farmer can hope to be successful if he disregards the teaching of modern science. Overstocking of farms must be prevented at all costs; marshes must be drained or the sheep kept away from them; the sheep must be treated regularly according to the best methods known. If these

precautions are adopted, the parasites can be kept in check and profitable sheep farming will become possible; if the advice is ignored, then the financial loss to the farmer will be the smaller the sooner he gives up farming.

The great value of hygienic methods in farming has been proved in the case of *Ascaris* infection of pigs. Some years ago the pig breeding industry was seriously threatened by this parasite; whereas to-day, thanks to the researches of Ransom and others, the infection can be eliminated completely.

6.—*External Parasites.*

The two most important groups of ecto-parasites, the ticks and the tsetse flies, have already been referred to.

A further very important group are the mites. These minute parasites are responsible for the diseases known as scab or mange in animals, and have caused untold losses. In the fight against these diseases, the British Dominions have had very signal success. Australia and New Zealand have eradicated sheep scab completely, Canada is practically free of it, and in South Africa, where the presence of a large native population owning a very inferior class of sheep has made the campaign particularly difficult, the incidence of the disease has been reduced to infinitesimal proportions, and complete eradication within a short time is hoped for.

Another very important ecto-parasite of sheep is the so-called Blowfly. The trouble is caused by these flies depositing their eggs in the wool of sheep, especially in the soiled and moist parts, and by the resulting maggots causing serious damage to the wool and sheep itself. The pest has assumed alarming proportions in Australia and is becoming more and more important in other countries, including South Africa. Determined efforts are being made to combat the pest and valuable progress has been achieved. In this research entomologists and veterinarians are working hand in hand.

7.—*Diseases due to Poisonous Plants.*

That certain plants are poisonous and may have fatal effects when consumed by animals has probably been known for centuries. However, it is only during recent years that plants have been studied which produce diseases comparable with epizootic diseases. In this field of research South African workers have been prominent.

One of the most remarkable of these diseases is that known in South Africa as "*gousietkte*" (rapid disease) of sheep, which was studied some years ago by Theiler, Du Toit and Mitchell. The cause of the disease was shown to be the plant *Vangueria pygmæa*. The remarkable nature of this disease may best be illustrated by the following incident: A farmer brought a flock of 1,760 sheep on to a farm where this plant was known to be present, and left them there for less than 24 hours. They were then removed to a clean farm and for about six weeks nothing happened. Thereupon the sheep suddenly started dying, and within a few weeks 1,047 sheep had died. This strange occurrence is explained as follows: The poison contained in the plant acts on the heart muscle, causing a myocarditis with subsequent dilatation of the ventricles. As soon as the process has reached a certain stage the animal dies of "heart failure." To the casual observer the disease presents all the characteristics of an infectious disease; in the case quoted above it certainly seemed as if the disease had "spread" rapidly among the flock.

The elucidation of the cause of the disease was of great practical importance, inasmuch as it enabled the farmer to enclose that portion of his farm where the poisonous plant grew, and to keep his sheep away from it.

Other no less remarkable diseases were studied by Theiler and his co-workers.

A disease called "*geeldikkop*" (yellow thick head) in sheep was shown by Theiler (1928) to be due to a plant *Tribulus terrestris*, although more recent work by Quin, Steyn and others at Onderstepoort has shown that there are other factors to be considered in the causation of this disease.

"Vomiting disease" of sheep was studied by Du Toit (1928) and proved to be caused by *Geigeria* spp. The disease may produce very severe losses in certain years, especially after droughts, when the plant is very widespread.

Many other instances could be cited of diseases which assume great economic importance and which have been traced to poisonous plants. One final example may suffice to demonstrate the peculiar behaviour of some plant poisons. A disease of horses known as "*jaagsiekte*" was proved by Theiler (1918) to be due to *Crotalaria dura*. When the plant is fed to horses it produces, after a long "incubation period," a fever and certain characteristic changes in the lungs. On the other hand, if the same plant is fed to cattle it produces equally definite changes in the liver.

The study of poisonous plants is now being actively pursued in various countries, and further interesting developments may be expected. It is obvious that the co-operation of botanists is essential for the success of this work.

8.—*Deficiency Diseases.*

Lack of time prevents me from referring in any detail to this interesting group of diseases.

The great importance of the vitamins in the nutrition of human beings is so well known that it need not be stressed here. In the case of the common domestic animals (except perhaps the pig, the dog and the fowl) the vitamins seem to be of far less importance than in human beings.

On the other hand, mineral deficiencies are, generally speaking, much more important in animals than in human beings. The reason for this is not far to seek; animals, in most cases, derive their nourishment directly from the products of the soil in a limited area; and if the soil should be deficient in any mineral, that deficiency will be reflected in the diet of the animal.

In recent years it has been found that large portions of the earth's surface are deficient in some mineral or other which is essential for the normal health and growth of animals. This subject was discussed by Dr. J. B. Orr, himself a pioneer in this field of work, in his Presidential address to this Section five years ago.

In South Africa as well as in other African territories and in Australia the most serious deficiency is that of phosphorus. Theiler and his co-workers have investigated the ill effects of this deficiency on cattle very fully. They have shown that cattle grazing on phosphorus-deficient pastures develop a depraved appetite for bones and other carcass débris, and this may lead to the ingestion of toxic material with fatal results ("lamsiekte" in South Africa);

further, that such cattle remain stunted in growth, are late in maturing, are frequently unfertile, produce very little milk, and are very susceptible to various diseases. By the addition of a small daily ration of phosphorus to the diet, they were able to bring about an almost miraculous improvement in the condition of the animals.

As a result of the general feeding of phosphorus compounds in the deficient areas of South Africa, the disease "lamsiekte," which a dozen years ago caused enormous losses, has practically disappeared and cattle farming in those areas has again become profitable. The significant fact may be recorded here that the village of Vryburg in Bechuanaland, where ten years ago milk was very scarce, to-day owns a creamery which handles a larger volume of cream than any other creamery in South Africa.

In other countries, where other deficiencies occur, equally striking results have been obtained. Attention need only be directed to the work of Aston in New Zealand on iron deficiency, and the recent brilliant researches of Orr and his co-workers at the Rowett Research Institute on the whole problem of mineral deficiencies.

B.—Other Veterinary Problems.

At the beginning of this paper mention was made of Dr. Gordon's Presidential address in which the need for further research into problems of animal diseases, animal nutrition and animal breeding was emphasised.

In regard to animal diseases the examples quoted in the preceding section show that considerable advance has been made during the years that lie immediately behind us. Many diseases have been conquered, but many others still await solution. Meanwhile these diseases cause enormous losses and even threaten the adequate supply of the world's markets with meat and other animal products.

Problems in connection with the nutrition of animals are now receiving attention in many countries. The vast importance of correct feeding can be illustrated best by referring again to the phosphorus deficiency which exists in the pastures of South Africa and other countries. The astounding results which have been achieved with the addition of a small quantity of phosphorus compounds to the ration of the animals promise to revolutionise the beef and dairy industries in those countries.

Animal breeding also presents problems of great importance, and these are intimately bound up with the problems of disease and nutrition. In South Africa, as in other countries, there is a constant cry for the replacement of the scrub bull by pedigree sires. This demand would be met to a far greater extent, where it not for the fact that in many parts of the country pedigree bulls cannot live because of disease or nutritional difficulties. In some of the best ranching areas diseases like heartwater, piroplasmosis and anaplasmosis render the introduction of susceptible animals quite impracticable, unless adequate measures for their protection be adopted. And, similarly, the deficient state of the pastures in other areas nullifies all efforts at the improvement of stock, unless the diet be supplemented.

It is pleasing to be able to record progress along both of these lines. In South Africa control over the diseases mentioned above is gradually improving and, in regard to the deficient areas, recent investigations by Du Toit and Bisschop have shown that the grading up of native stock can be carried out with complete success provided the deficient mineral is supplied. Both beef cattle and dairy cattle have been bred on the extremely deficient veld of Bechuanaland without any signs of deterioration, and the cost of the supplementary ration has been negligible in comparison with the material advantage derived from such feeding.

Gratifying though the success which has been achieved may be, the need for further research on live stock problems has never been greater than it is to-day. The development of enormous areas in the British Dominions and Colonies is entirely dependent on the progress of research. With the aid of further scientific measures, these new countries could absorb a very much larger population than they now harbour. The danger of over-population will not make itself felt for generations, nor need the danger of over-production be contemplated seriously. The shortage which has been predicted in the British beef market will have to be met by the Dominions and Colonies. The same applies to the mutton market. And in regard to wool it seems certain that the existing depression is temporary and that, as soon as the present fashions alter, regrettable though such a change may be from other points of view, the wool trade will be restored to its previous healthy state.

The prosperity of a very large percentage of the population, both European and Native, in the Dominions and Colonies depends on the live stock industry (breeding of pedigree stock; beef, mutton or pork production; dairy farming, wool or mohair production; skin and hide trade; poultry farming, etc.). These farmers look to the veterinary service of their countries more and more for assistance and protection. Without this assistance profitable stock farming, especially in the tropical and sub-tropical countries, is impossible. The assistance, if it is to be effective, must be based on the latest achievements of scientific research. Rule-of-thumb methods will not suffice. There are fundamental problems which can only be studied at specially-equipped institutes; and this is now being done. But, in addition, each country has its own particular problems which it must solve for itself at its own research institutions. Wise governments will support these institutions liberally. Money thus spent will repay itself a hundredfold.

In a humble way South Africa has proved the wisdom of maintaining an adequate veterinary research service. At Onderstepoort the Government, twenty-one years ago, established what must be regarded as a fairly large Research Institute, if the size of the population be taken into consideration. This Institute, under the brilliant directorship of Sir Arnold Theiler, soon proved to be not a liability but a valuable asset to the country. The results obtained in any one of its various sections would probably have justified the maintenance of the entire Institution.

At the beginning of this paper it was said that the Dominions and Colonies have played an important part in the recent growth and development of modern veterinary science. The quality of the research work produced by veterinarians in these countries has been of such high order that it soon placed veterinary science (which not many years ago was regarded as the Cinderella of sciences) abreast of the other sciences. As a matter of fact, in South Africa it can be said, without disparagement

to any other group of workers, that, in research, veterinary science occupies a very high, if not the leading, position. This has had a wholesome influence on the science itself and on the type of worker who was recruited in its service. The stigma of inferiority which for so long was attached to the veterinarian has disappeared. To-day, veterinary science is looked upon as a field of work which offers almost unlimited scope for research and which, in its practical application, may bring untold material benefit to a country.

Now that the British Association for the Advancement of Science has honoured the veterinary profession by calling one of its members to the chair of a Section, the hope may be expressed that, in future, in this august gathering also, veterinary science may continue to occupy a place commensurate with its scientific achievements and with the rôle which it seems destined to play in the development of the British Empire.

The discussion upon Dr. Du Toit's address was opened by W. H. Andrews, D.Sc., Director of the Ministry of Agriculture's Veterinary Laboratory at Weybridge. Dr. Andrews thanked the President for a most interesting and stimulating address. He thought that the Association and that Section, in appointing, for the first time, a veterinarian as President, had made a most appropriate choice in selecting the head of what was undoubtedly the largest and best-known veterinary research institution in the world, and also one whose own researches were adding to the reputation of that institution.

He referred to piroplasmosis as a disease of limited importance to this country, occurring only in certain moorland areas, but mentioned that the export of pedigree stock to South America was encouraged and facilitated by the immunisation of cattle against both piroplasmosis and anaplasmosis at the laboratory of the Ministry of Agriculture, at Weybridge. He wished particularly to draw their attention to the South African work on phosphorus-deficiency, as an illustration of the manner in which properly subsidised "practical" or applied research, in suitable hands, might lead not only to the attainment of the specific goal aimed at, but also to wider issues and valuable results which had not been in any way looked for or expected. That work had been commenced as a straight-forward attack on the bovine disease lamziekte, and it had been pursued patiently for some years. Success had been attained, and lamziekte could now be prevented. That in itself was an achievement of great economic importance to South Africa, for the disease had caused terrible losses, and had constituted a grave menace to cattle-breeding over a very large portion of the country.

Dr. du Toit's address would have shown them, however, that the work had developed into an investigation of the whole subject of phosphorus-deficiency, and surprising results had been attained in promoting the rearing of healthier and quicker-growing cattle of a greatly improved type. The work had gone far beyond the prevention of one specific disease, and its economic importance to South African agriculture could hardly be calculated.

He thought that Dr. du Toit had been very modest in his statement of the benefits conferred on South African stock-farming by the work of the Veterinary Research Division at Onderstepoort. South Africa, as far as most of the country was concerned, had never been in the same dire straits as those African territories which even now were badly infested with tsetse flies and trypanosomiasis, but it had been sorely afflicted with most serious animal plagues, and stock-farming had been a highly speculative venture. This had all been changed; the most serious diseases had been brought under control, or even eradicated completely, and one no longer heard of districts in which it was "impossible to keep sheep." The change which had occurred during the past twenty or thirty years was indicated by the improvement in the quality of the animals kept, even more than by the increase in numbers. Farmers in formerly unhealthy districts did not hesitate to introduce breeding animals of good quality and high price, and the change in the type of the cattle had been most striking during the twenty years that he (the speaker) had known the country.

The work of Onderstepoort reflected very great credit on the South African Governments which had supported the institution; they had spent freely, but he would venture to assert that the country had been very amply repaid.

The work of Onderstepoort was in particular a testimony to the genius and the industry of Sir Arnold Theiler.

When one came to examine the work, one was particularly impressed by its breadth. At Onderstepoort the chemist, the helminthologist, the entomologist and the botanist had worked, each specialising in the application of his own branch of science to problems of animal health. These specialists had worked in close collaboration and daily association with one another and with the veterinary pathologist and clinician.

The work had been broad and many-sided, and he considered that it was particularly for that reason that it had been successful.

When one came to contemplate what veterinary science had done and was doing for agriculture in Great Britain, he was afraid that the picture was a very different one, and the comparison with South Africa did us little credit.

In certain fields we could claim to have accomplished much, and in the first place he would mention the control of the more spectacular epizootic diseases. Nowadays we were very apt to forget the former ravages of cattle plague, bovine pleuro-pneumonia, glanders and rabies, but this country had suffered very serious losses in the past. We could congratulate ourselves on the eradication of these diseases and their subsequent exclusion. Without the efficient State veterinary service which had carried out this work, we might well have introduced not only these but also other epizootic diseases such as sheep-pox.

Great Britain had not only built up an efficient State service for such work, she had been a pioneer in that field, and we might remember with pride that the series of international congresses to consider such questions, and further mutual help and progress, was instituted at the suggestion of an Englishman, Gamgee.

The private veterinary practitioner had played, and was to-day playing, a very useful part in agriculture. His work was conducted quietly and generally in comparative obscurity, but it was essential and valuable work which did not always receive as much credit as it deserved. One had to remember, however, that the isolated practitioner, while accumulating great clinical knowledge and experience, could in general only apply the definite scientific knowledge that had been gained by those in a position to speculate and experiment. In veterinary medicine, as in human medicine, and every other branch of science, there were many and serious gaps in our knowledge, and all that we knew of any subject, however imposing it might seem, was probably only a small part of what there was to be known.

When we considered the question of veterinary research, the branch which South Africa had so well developed to the great advantage of her stock-owners, we found least of which to be proud. Certain individuals, very few in number and working with most inadequate resources, had indeed accomplished work that entitled them to our highest respect, but as a nation we had made a very small contribution to the sum of knowledge on these subjects.

The reason for our past lack of national support for veterinary research and education was not very clear. It most certainly was not that stock-breeding was relatively less important, as a branch of agriculture, in this country. He did not think that there was any part of the Empire in which stock-breeding was of greater value and importance. Many people might be tempted to assume that the reason lay in the fact that animal disease was not a very serious factor in Great Britain, but that idea was absolutely wrong. He did not wish to give a wrong impression

with respect to animal disease in Great Britain; the position here was no worse than in other European countries, and probably in some respects it was better than in many of them, but nevertheless the loss from animal disease was very large—far larger than was realised.

The present position in South Africa, with respect to animal disease, was very similar, on the whole, to that of Britain and other European countries. South Africa had largely overcome her major epizootic diseases, the diseases which came in great waves and attracted attention, but as her animal population increased, the ravages of many less spectacular but none the less serious diseases became more evident. In spite of their success with the major plagues of the country, the veterinary service of South Africa, on both the research and the field sides, found plenty of practical problems to occupy all their energies, and their services were just as essential and valuable to the agricultural community.

Similarly, Great Britain had overcome, and was generally able to exclude, the more spectacular epizootic diseases, although foot-and-mouth disease still found gaps in our defences, and in connection with poultry we were still exposed to epizootic disease in very serious forms. But we were left with a host of less spectacular, slower and more insidious conditions which ultimately caused most serious losses. Some were widespread and might be considered major problems. Others were in a sense minor, because they inflicted serious losses but only on occasional stock-owners, or because, while affecting many owners, they caused only comparatively low percentage losses. The aggregate loss, however, was really heavy, and he did not think that stock-farming could afford the loss.

Moreover, it ought always to be remembered that the disease position was not static. Every change that occurred in the conditions under which our animals were kept had some influence on the incidence of disease. Progress in agriculture was directed towards the development of more intensive methods; every effort was made to increase the concentration of the animal population supported by a given area; any such increase must necessarily favour the transmission of parasites from one animal to another. In the absence of special precautions, improvement of our pastures, and increasing concentration of animals upon them, would necessarily lead to serious, and even disastrous, outbreaks of disease. Further development of intensive methods introduced new disease problems, and intensified those with which we were familiar.

He considered that the most striking difference between the situation in South Africa and that in Great Britain lay in the attitude of the farmer. The South African farmer, when troubled by disease in any form, clamoured for help—he appealed to his nearest veterinary officer, to Dr. du Toit at Onderstepoort—in some cases he even appealed to Ministers and to Parliament. In this country, most unfortunately, where a disease baffled the efforts of the local veterinarian, the farmer usually appealed to nobody, but directed his efforts towards the *concealment* of disease. He (the speaker) did not refer to scheduled or notifiable disease, for we were a very law-abiding community, but to other disease, to cases where no legal obligations existed. Our farmers did not wish their herds or farms to "get a bad name"—an attitude which could easily be understood, but one which emphasised their lack of faith in the ability of science to find a remedy for their troubles, and one which suggested that we had not done very much in the past to win their confidence. The policy of concealment had most undesirable consequences; nobody knew the real extent of the losses due to disease—the agricultural community itself was not properly aware of them, for a farmer might suffer serious loss and be quite unaware of the fact that very many other farmers, including possibly his own neighbours, were suffering similarly. Moreover, it would hardly be fair to blame any Government for failing to deal with evils which had never been properly brought to its notice. He was glad to say that the position in that respect was improving very materially. Both large farmers' associations and societies and individual farmers were appealing more freely and openly for investigation of animal disease problems, and the existing organisations were now unable to deal with all the applications which reached them.

We needed far more research on this subject, and this research should be of two main kinds. In the first place there was research of the more academic and perhaps highly specialised kind which was not always directly related to practical objects and requirements. This type of work could best be developed at universities and colleges.

In the second place, there was what he would term practical research, in the sense that it was deliberately directed to the urgent needs of the moment. Such work should be broad and comprehensive, and it was necessarily very expensive; it could best be undertaken at a Government research institution, in close and direct contact with the problems of the field. This was a type of work which had been well developed, not only in South Africa, but also in the United States, and it was developing rapidly in Canada, Australia and such colonies as Kenya. Onderstepoort had given a fine example of a State institution working at the problems of the day, pursuing and largely achieving practical ends, and yet alive to wider interests and deeper meanings, as had been shown so well in their lamziekte work. In this country we had in the past largely neglected and starved both the academic and the practical sides of animal disease research, but he trusted that before long we should be able to play a part more worthy of a country with our agricultural wealth and traditions. He also wished to echo the President's hope that the important subject of animal health would in the future receive far more attention from that Section of the British Association than it had been accorded in the past.

How to Kill an Association.

(Reprinted from "The British Friesian Journal.")

(1) Don't come to the meetings.
(2) But, if you do come, come late.
(3) If the weather doesn't suit you, don't think of coming.
(4) If you do attend a meeting, find fault with the work of the officers and other members.
(5) Never accept an office, as it is easier to criticise than to do things.
(6) Nevertheless, get sore if you are not appointed on a committee; but, if you are, do not attend the committee meetings.
(7) If asked by the Chairman to give your opinion regarding some important matter, tell him you have nothing to say. After the meeting, tell everyone how things ought to be done.
(8) Do nothing more than is absolutely necessary, but, when other members roll up their sleeves and willingly, unselfishly use their ability to help matters along, howl that the Association is run by a clique.
(9) Hold back your dues as long as possible, or don't pay at all.
(10) Don't bother about getting new members. Let the Secretary do it.
(11) When a banquet is given, tell everybody money is being wasted on blow-outs, which make a big noise and accomplish nothing.
(12) When no banquets are given, say the Association is dead, and needs a can tied to it.
(13) Don't ask for a banquet ticket until all are sold.
(14) Then swear you have been cheated out of yours.
(15) If you do get a ticket, don't pay for it.
(16) If asked to sit at the speaker's table, modestly refuse.
(17) If you are not asked, resign from the Association.
(18) If you don't receive a bill for your dues, don't pay.
(19) If you receive a bill after you've paid, resign from the Association.
(20) Don't tell the Association how it can help you, but if it doesn't help you, resign.

The Veterinary Profession in South Africa.

(1) The Repatriation Departments and their Veterinary Organisation.

By Dr. H. H. Curson, F.R.C.V.S., Veterinary Research Laboratories, Onderstepoort, near Pretoria.

Introduction.

As a result of the Treaty of Vereeniging (May 31st, 1902) provision was made for assisting the Boers to resume their farming operations. The Imperial Government sanctioned the expenditure of £3,000,000 in order to repatriate ex-enemy subjects who, "owing to war losses are unable to provide for themselves." To administer this grant, Repatriation Departments were immediately organised in the Transvaal and Orange River Colony, there being in each Colony a central commission at headquarters (Pretoria and Bloemfontein) and district commissions, usually under the chairmanship of the local Magistrate.

Never could State departments commence their duties under circumstances so unfavourable as those operating at the termination of hostilities. Peace was concluded in winter, when, from a livestock point of view, the herbage was both poor and scanty; the countryside had been desolated as a result of military operations; there was no civil service and postal facilities were almost entirely absent; stock diseases were rampant; railway communications were at the disposal of the military, who were engaged in returning troops to their homes, and the bulk of the livestock was in the possession of the military.

Although assistance was forthcoming in the form of supplies (rations, seeds, building material and implements, ploughing, etc.), the aspect which concerns us chiefly as veterinarians was the provision of livestock for transport and breeding purposes, it being also this item which contributed more than anything else to the dissatisfaction which resulted in the appointment of a Committee of Enquiry in the Transvaal in 1908.

It must be borne in mind that as soon as peace was declared, the military authorities wished to dispose of all animals in excess of the requirements of the Army of Occupation. There were on hand 131,700 horses, 76,600 mules, 12,800 donkeys and 74,200 oxen (these figures are approximate) and as only 20,000 horses and 25,000 mules were required, it will be realised why the authorities were so anxious to get rid of the surplus animals[1].

Repatriation in Orange River Colony.

In the Orange River Colony the executive head of the Repatriation Department was the Lieutenant-Governor (Sir H. Goold Adams) and the Secretary was Col. H. J. McLoughlin who, when the Government Relief Department was formed later, became director. The first task of the authorities was to return the Boer families to their farms, and transport for this service was taken over from the Army, the *total* number of animals derived from this source being: 11,577 horses[2], 6,000 mules, 12,004 cattle, and 110 donkeys. As can be imagined, "the stock taken over was found to be full of disease and in very poor condition"[3]; in fact, so unsatisfactory were some of the animals that they were refused by the Repatriation Authorities. As an example of the serious state of affairs may be mentioned certain oxen taken over by the Agricultural Adviser, late in 1902, at Heilbron and Kroonstad. Of 201 oxen accepted at Heilbron, 150 died from poverty within a week, and in order to escape further losses the remainder were sold to the Volunteer Repatriation Department[4] at £3 10s. per head! At Kroonstad, of 220 oxen taken over on August 7th, 1902, 117 were dead two months later from the same cause.

The losses of oxen alone from July-December, 1902, "at Kroonstad, Heilbron and Ladybrand, which were the principal depôts where military stock was handled by the Repatriation Department, amounted to £7,800, or over 11 per cent." It is only fair to add that a rebate of £34,920 was obtained from the War Office on account of the mortality sustained[5].

In order to expedite restocking, the Lieutenant-Governor commissioned certain individuals to purchase cattle and sheep which, owing to the ravages of war, had to be purchased from the adjoining territories. Stock procured in this manner numbered 9,246 cattle, and about 100,000 sheep[6]. In one case "no arrangements were made for the inspection of the stock prior to purchase, nor any precautions taken to ensure that the numbers advised, which were rendered to account for the Imprest, were actually handed over."[7] In fact, in this particular case, the buyer, "while purchasing cows and calves as one head, when entraining advised them to us (*i.e.*, Head Office) as two head."[8] Further, certain stock stated to have been supplied, were never received by the Repatriation Authorities[9].

There was much negligence also in connection with the importation of mules, numbering in all 10,646[10] and purchased chiefly from South America. Of one contract for 1,214 animals at £16 per head guaranteed to be "in fair condition, fit and sound," the report of the departmental agent at Capetown (dated 31/12/02) stated that only 200 had been seen "and they look a *very miserable* lot, bad condition and very small."[11]

The worst deal, however, was that concerning some

1 Smith, F. A. A Vet. Hist. of the War in South Africa. pp. 229, 282 and 297 (*Veterinary Record*, 1912/14).

2 The number 11,664 plus 131 breeding mares is given on p. 56, Report Committee of Enquiry Transvaal Repatriation Debt (T. 32, 1908).

3 Report Auditor-General of Orange River Colony on Repatriation, etc. 1902/5. p. 26.

4 The repatriation of Boers who had assisted the Imperial Forces was carried out by a separate Volunteer Repatriation Dept.

5 Report Auditor-General of O.R.C. on Repatriation, etc. 1902/5. p. 27.

6 Report of Committee of Enquiry on Repatriation Debts (Transvaal). T. 32. 1908. p. 59.

7 Report of Auditor-General of O.R.C. on Repatriation, etc. 1902/5. p. 41.

8 Report of Auditor-General of O.R.C. on Repatriation, etc. 1902/5. p. 45.

9 Report of Auditor-General of O.R.C. on Repatriation, etc. 1902/5. p. 43.

10 Report of Committee of Enquiry on Repatriation Debts (Transvaal), T.32-'08, p. 56.

11 Report of Auditor-General of O.R.C. on Repatriation, etc., 1902/5, p. 46.

sheep made with a gentleman from Victoria, Australia. He undertook to supply 2,000 merino rams which " would be examined and certified to, both as regards quality and state of health in which shipped, by Australian Government experts.[12] Of 2,100 rams which left Australia only 720 were fit for issue on arrival in the Orange River Colony. The balance either died (on the voyage 373 were lost) or were sold at Capetown to avoid further loss in transit. When it is stated that these animals were bought at from 1s. to 1s. 6d. per head, and the Repatriation Department paid £8,900 18s. 4d. for the consignment (including insurance and shipping fees), it will be seen that the whole transaction was most unfortunate. Accompanying this shipment were 8,000 ewes, of which 600 perished on board, but it is not known to whom these were consigned.

Of the several communicable diseases which attacked the animals belonging to the Repatriation Department, glanders proved the most serious. " The estimated loss . . . from glanders alone, during the period July, 1902-December, 1902, was: 655 horses, valued £18 18s. 10d. each, £12,406; 967 mules, valued £21 10s. 2d. each, £20,798; total, £33,204, but this does not include losses from glanders, subsequent to 31/12/02, or any losses which occurred owing to the poor condition of the animals which were taken over from the Military."[13] At Kroonstad the losses were particularly severe but, owing to the veterinary surgeon being so often away on duty, it was not always possible to furnish death certificates, the depôt being frequently in charge of a layman. Cases of mange, lung sickness, epizootic lymphangitis and anthrax were less common, but scab in sheep and goats was exceedingly prevalent.

The total loss due to deaths from all causes was estimated at £154,785 11s. 0d. The greater part of the mortality occurred from July-December, 1902, owing chiefly to the debilitated condition of the stock. The percentage of deaths to the total number of animals handled during the whole period was as follows: Horses 24·4 per cent., mules 22·8 per cent., cattle 9·5 and sheep 0·9 per cent.[14]

Repatriation in Transvaal.

In the Transvaal immediately after Peace, a special Repatriation Department, under the Colonial Treasurer, was organised, this being an offshoot of the Land Department (created in December, 1901) which itself followed and took over the assets of the Cattle Preservation Department, formed in May, 1901. The Cattle Preservation Department " had for its object the preservation of breeding cattle, so that, on the termination of hostilities, the Colony should not be depleted of stock."[15] Owing, however to the possibility of recapture by the enemy and to the meat requirements of the military, the scheme was abandoned. The Land Department, early in its existence, played a notable part in re-settlement, for not only did it import cattle, but also controlled stock farms which were later taken over by the Department of Agriculture.

Responsible for the organisation of the Repatriation Department was the Secretary, Mr. A. M. Hughes, who remained in charge during the whole period of its existence, namely, from June, 1902, until March, 1904. Subdivisions, for example, transport, supplies, stock and accountancy, were constituted each with its head, but entire control was vested in the secretary with headquarters at Pretoria. As in the Orange River Colony, district commissions were formed, but they do not appear to have had the same authority as similar bodies had in the adjoining colony.

Of the various branches of the Repatriation Department, the Stock Branch and the Transport Branch interest us as veterinarians. Since the latter was the more important, it will be described first. The Director of Transport, aided by an Assistant Director, had five District Inspectors[16], each directly responsible for the transport in one of the five areas into which the Transvaal had been divided. Not only was the Branch required to perform transport work for the Department, but also to do the same for all other Government Departments. Vehicles and transport animals had to be procured from the Army and as these were distributed throughout South Africa, much delay was occasioned. After the country folk had been restored to their homes, not only was it necessary to feed them for nearly two years[17], but in many cases arrangements were also made for ploughing their lands. The distribution of stock was a difficult task in view of the absence of fencing and menace of disease. Altogether, 13,672 horses, 62,770 mules, 14,443 donkeys, 121,604 cattle and 7,844 sheep and goats were handled by the Transport Branch[18], the numbers obtained from the Army being 18,000 mules, 54,000 oxen and 4,500 donkeys. Local dealers also purchased on behalf of the Branch.

Owing to the poor condition of many of the Army animals, this resulting in the spread of communicable diseases, such as mange, and death from actual debility, a rebate amounting to £135,080 was granted by the War Office[19].

Since the Transport Branch had its hands full, a special section, the Stock Branch, was organised under a Director in order the purchase stock, not only from the adjoining territories, but also from abroad. Most of the purchases were made in the Cape Colony, but cattle were imported chiefly from Madagascar and Somaliland and 5,000 head of Texan heifers were acquired from the Land Department. The total number of animals imported by September, 1903, when the Branch was closed, was 49 horses, 7,060 mules, 9,200 donkeys, 59,126 cattle and 7,809 sheep and goats. The stock then on hand was transferred to the Transport Branch, which itself came to an end in November, 1904, when the balance of the livestock and

[12] Report of Auditor-General of O.R.C. on Repatriation, etc., 1902/5, p. 48 and 114.

[13] Report of Auditor-General of O.R.C. on Repatriation, etc., 1902/5, p. 27.

[14] Report of Auditor-General of O.R.C. on Repatriation, etc., 1902/5, p. 69.

[15] Transvaal Administration Reports for 1905. Part iii. (Commissioner of Lands), p. Aal. In 1902 Ordinance 35 was passed making it an offence to slaughter for sale any cow, heifer, or calf. Orange River Colony Ordinance 18/1902 contains similar restrictions.

[16] Mr. J. R. R. Hamilton, M.R.C.V.S., was a District Inspector.

[17] At one time the number of people rationed was about 95,000 (Final Report, Repatriation Dept. 1906. p. 15).

[18] Final Report, Repatriation Dept., Transvaal. 1906. p. 6.

[19] Final Report, Repatriation Dept., Transvaal. 1906. Section of Auditor-General. p. 12.

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equipment was taken over by the Division of Livestock[20] of the Department of Agriculture.

Of the oversea importations it was stated by Theiler in 1904[21] that Texan, Queensland and Madagascar cattle were immune against redwater. It was further reported that " those which took most readily to the country were the Indians," of which only a few were purchased. An example is given where (in the Western Transvaal) Indian cattle thrived on veld which was insufficient to maintain Afrikanders. The Texan cattle, comprising crosses of English origin, were hardy of constitution and about 1906-7 were " perhaps the most sought-after cattle in the Transvaal."[22]

As a result of the work of the Repatriation Department, 10,534 horses, 35,809 mules, 8,244 donkeys, 88,639 cattle and 5,806 sheep were distributed among farmers. In addition, many animals were sold by auction, sales being arranged in every district. It was an instruction[23] that no poor animals of which there was a risk of loss should be sold, as special arrangements would be made for getting them fit for sale; and further it was laid down that a " Veterinary Officer should inspect all animals previous to disposal." These orders, however, do not appear to have been carried out in all cases.

Soon after the granting of Responsible Government (1906), a Committee of Enquiry was appointed to investigate whether issues had been made at too high a price. Among its recommendations were that the charges for mules, oxen, cows and donkeys were excessive and that a 25 per cent. discount for cash be allowed, and further " that certain cases of loss owing to death of stock from disease latent at the time of issue be enquired into, and relief granted in genuine cases." Undoubtedly many deaths were due to debility and exposure during the severe winters of 1902 and 1903, but if precautions had been taken, *e.g.* the provision of shelter, as at the Burgher Land Settlements, the mortality would have been considerably reduced. As to the granting of relief, it would not appear that the recommendation was acted upon, for such an enquiry would have been most unsatisfactory.

Repatriation in the Transvaal was complicated by three chief factors, namely, the great variation in altitude and climate, the marked prevalence of stock diseases and, finally, the introduction of susceptible stock from abroad. There is no need for details, but the position with regard to diseases became so serious that " to combat these it became necessary to establish a veterinary branch in connection with this Department, and it was only by adopting the very strictest measures for the destruction or isolation of infected animals that these diseases were in any way kept in hand."[24] As an indication of the seriousness of the position, it may be mentioned that " the first 18,000 mules taken over from the military were not all tested for glanders " owing to mallein not being procurable.[25] At Standerton " 300 mules were taken over from the military authorities, and when tested 100 had to be destroyed." At the Bethal depôt, glanders was prevalent for ten months! Horse sickness, lymphangitis, debility, mange and piroplasmosis all exacted a severe toll, the first being responsible for a mortality of 40 per cent. at the Potchefstroom Burgher Land Settlement in 1903.[26] In cattle, East Coast fever, redwater and gallsickness, also lungsickness, rinderpest, and heartwater were mainly responsible for mortality, while in sheep, blue tongue and heartwater caused many deaths. Plant poisons, of which little or nothing was known, were to blame for deaths in all classes of stock. The total losses " by death amounted to £641,316 11s. 10d. . . . and with the exception of very few cases the casualties were supported by certificates of responsible officers."[27]

Veterinary Arrangements.

With regard to the veterinary organisation formed for assisting the Repatriation Departments of the Orange River Colony and Transvaal, a limited amount of help was forthcoming from the Veterinary Department of the South African Constabulary, and appreciation of this service has been made more than once.[28] As no Civil Veterinary Division yet existed, it was necessary that veterinary surgeons should be appointed to the Repatriation Departments and fortunately there were available the civil veterinary surgeons of the Army Veterinary Department, many of whom, now accustomed to colonial conditions, offered their services and thus forfeited their right to a free return passage to England.

In the Orange River Colony provision was made on the head office staff for one veterinarian at £600 per annum and two at £450 per annum for 15 months.[29] Mr. Otto Henning, formerly state veterinarian of the Orange Free State, filled the higher position from October, 1902, until May, 1904, when the Government Relief Department, the name under which the Repatriation Department in the

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[20] This Division, of temporary character, was staffed by former members of the Repatriation Department, its object being to dispose not only of Repatriation stock but also of certain mules and donkeys. The latter had been acquired by the Department of Agriculture for transport and ploughing in certain districts, where both East Coast fever and horsesickness were prevalent.

[21] Theiler, A. (1904). Report of Government Vet. Bact., Transvaal. 1903/4. p. 133.

[22] Transvaal Dept. of Agriculture Handbook, 1907. p. 56.

Of the cattle from the Cape Colony, the Repatriation Department allowed Mr. A. C. MacDonald, of the Department of Agriculture, to select 50 head of Afrikanders as a nucleus for further improvement (*Trans. Agr. Jl. III.* 2). The result of this experiment is not known.

[23] Report of Committee of Enquiry, Repatriation Debts (Transvaal) (T. 32, 1908). p. 47.

[24] Final Report, Repatriation Dept., Transvaal, 1906. p. 9.

[25] Smith (l.c. 1) mentions (p. 282) that there were 25,000 doses mallein for 131,000 horses and mules!

[26] General Administrative Report, Burgher Land Settlements, 1903-1904. p. B. 9.

[27] Final Report Repatriation Department, Transvaal, 1906. Section of Auditor-General, p. 14.

[28] (*a*) Ann : Rpt. Agr. Transvaal, 1903. In this he thanks the P.V.O., S.A.C., and his staff " for the valuable assistance they rendered at a most critical period. (*b*) In a sketch of the career of Col. James Irvine Smith, S.A.C. (*Sun & Agr. Jl. of S. Africa*, Jan., 1930) reference is made to the fact that he recognised Rhodesian redwater in some Repatriation cattle stationed at Komatipoort in August, 1902. (*c*) In *Vet. Rec.* 10/1/03, p. 443 it is stated that Vet.-Maj. C. J. Sanderson, P.V.O., S.A.C., was appointed one of the members of a Board of Officials instructed to frame laws and regulations for the control of animal diseases in the Transvaal.

[29] Report Auditor-General, O.R.C., on Repatriation, etc., 1902/5. p. 125.

Orange River Colony existed after 1/5/03, closed down. Only one other veterinary surgeon can be traced, this being Mr. C. C. Clarke, M.R.C.V.S., who worked in the north-eastern districts of the colony. It must be borne in mind that the Civil Veterinary Division functioned only from August, 1903, with the appointment of Colonel Flintoff, M.R.C.V.S. as chief and Messrs. D. Aitchison and A. Grist as assistants.[30]

No official records are available regarding veterinary appointments in the Transvaal, but thanks to colleagues the following information has been gleaned. Mr. A. McNae, M.R.C.V.S. (letter dated 17/11/29) believes that the salary was at first £365 per annum and later this was increased to £500. The sum of 12s. 6d. per day was granted for subsistence while away from headquarters, at which rations, accommodation and a native servant were provided. Service did not count on transfer later to the Civil Veterinary Division. As in the Orange River Colony the veterinarians, as indeed the whole organisation, were on a civilian footing, and there was no professional head, the Director of Transport, who was located at Pretoria (the Central Depôt being at Skinner's Court), being responsible for veterinary arrangements. Main depôts, for supply and transport purposes, were established at the more important centres along the various railway systems, including the Kimberley-Buluwayo line, and Mr. F. J. Dunning, F.R.C.V.S., who served with this Department from January, 1903, to May, 1906 (and was the last veterinarian to be employed), writes (letter 12/9/29): "each veterinary surgeon had an area including so many depôts or live stock farms." Here we see the beginnings of the organisation, adopted by the Department of Agriculture[31] in November, 1902 (by which time more than half the population had been restored to their homes) when a Civil Veterinary Division was established and the name *District* Veterinary Surgeon applied to the professional members of the staff.[32] It must, therefore, be emphasised that the first District Veterinary Surgeons (or now Government Veterinary Officers) of the new colonies were officials, not of the Department of Agriculture, but of the temporary Repatriation Departments organised immediately after the second Boer War (1889-1902). Serving under them, as is the case to-day, were lay inspectors and other officials. The attached list gives names of the veterinarians who performed repatriation duty in the Transvaal, along with the dates of their seniority in the Civil Veterinary Divisions of the Orange River Colony or Transvaal.[33]

Name.	Date of Seniority, C.V.D.	Further remarks.
John Crawford	—	—
J. Chalmers	6/3/1903	—
T. H. Dale	7/10/1903	Died 1917
F. J. Dunning	19/6/1905	—
W. G. Evans	1/2/1903	—
W. Hill	1/11/1905 (O.R.C.)	Died 1906
J. R. R. Hamilton ...	18/5/1904 (O.R.C.)	—
A. F. S. Jackson ...	—	—
G. W. Lee	30/9/1903	—
A. McNae	28/11/1902	—
W. Pye	—	Died 1904
F. M. Skues	26/9/1905 (O.R.C.)	Died 1921
E. E. Stokes	—	Died 1925
R. Stokoe...	—	—

The districts in which the above were stationed are not all known, but it is understood that Messrs. Dunning and Stokes were stationed in the Western Transvaal, Messrs. Jackson and Stokoe at Pretoria, and Messrs. McNae and Skues in the Eastern Transvaal. The Chief Veterinary Officer, Bechuanaland Protectorate (Mr. W. H. Chase) informs the writer (letter 17/9/22) that in 1902 and 1903 Mr. Evans did veterinary duty in the Protectorate, outbreaks of rinderpest in the Pitsani and Ramathlabana necessitating the employment of a professional man.

Much veterinary assistance was also received from Dr. Theiler (now Sir Arnold), who, appointed Government Veterinary Bacteriologist 1/7/1900, was able to give his colleagues the benefit of his wide experience of local diseases. When East Coast fever was rampant from 1902, the services of Mr. D. Hutcheon, M.R.C.V.S. and Mr. Lounsbury, Entomologist, both of the Cape Department of Agriculture, were utilised and their reports appear in the *Transvaal Agricultural Journal*.[34] Finally the assistance of the veterinarians of the Civil Veterinary Division in regard to Repatriation work must also be acknowledged.

No veterinary reports are available, but it is quite clear that three men for a country the size of the Orange River Colony were totally inadequate. Not only was the inspection of stock taken over by the Repatriation Department, a gigantic task in itself, but the detection and control of disease contracted by animals already in the possession of the farmers was a service to which a dozen veterinarians could have been attached with advantage. It is evident that the veterinarians employed were placed in the same subordinate position as they had recently occupied in the Army, for " the daily scale of rations issued to animals was never laid down but was left entirely to the discretion of the Local Administrators and Boards.[35] Further, it would appear[36] that the horses purchased in the Orange River Colony were taken over by Colonel J. A. McLoughlin, who was " eminently qualified to carry out this particular work." If the mallein test had been applied the losses due to glanders and referred to previously certainly not have occurred. Bad as the position was in the Orange River Colony, the situation with regard to animal diseases in the Transvaal was infinitely worse, for,

[30] At the conclusion of hostilities the former (republican) Agricultural Adviser (T. Smith) was reappointed. Later an Agricultural Advisory Board functioned until January, 1904, when Mr. W. J. Palmer was appointed Director of Agriculture, and a special Department was organised.

[31] Although an Agricultural Adviser (F. B. Smith) was appointed in March, 1902, the Department of Agriculture was not established until August, 1902, one of the first divisions to be created thereafter being the Civil Veterinary Division.

[32] At Union known as Government Veterinary Surgeons, but in order to evade payment of registration fees in Natal under Act 21/1899 the designation in 1915 was altered to Government Veterinary *Officers*.

[33] A. Grist, before he joined the Civil Veterinary Division, Orange River Colony, served under Major E. Leggett, R.E., in charge of Volunteer Repatriation. Grist was stationed at Belfast.

[34] Vol. I. No. 3, p. 45 and I. 4, and 11 respectively.

[35] Report of Auditor-General of O.R.C. on Repatriation, etc., 1902/5, p. 64.

[36] Report of Committee of Enquiry on Repatriation Debts. (Transvaal) T.32-'08, p. 56.

as mentioned above, restocking was complicated by climatic factors, presence of diseases, *e.g.* East Coast fever, not prevalent in the adjoining Colony and the importation of cattle from abroad.

Conclusion.

However much one might criticise the activities of the Repatriation Departments from the veterinary aspect, it is clear that the objects for which these organisations were formed were attained, and this in the face of great difficulties. At the end of a year's work the countryside was again populated, police posts had been established, rough houses had been constructed, small fields were again cultivated and cattle were to be seen grazing about the homesteads. If the people were poor, they had at least peace and with the creation of a Department of Agriculture and its various Divisions there was hope for the future.

From the veterinary point of view, the story is merely a continuation of that chaotic period, the War in South Africa (1899-1902), a veterinary history of which was so ably written by the late Sir Frederick Smith. In point of fact the details given above serve to fill a gap in the veterinary history of the two ex-republics, *i.e.*, between the Boer War and the creation of Civil Veterinary Divisions. We, who now labour under one central head, and enjoy not only improved professional status but also better facilities both for work and travel, can little appreciate the difficulties of those pioneers who in reality (but not in designation) were the first District Veterinary Surgeons of the Orange River Colony and Transvaal.

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Brief Biographies of Repatriation Veterinarians now dead.

Thomas Henry Dale (1868-1917). Born November 29th, 1868, at Manchester. Graduated at the New Edinburgh Veterinary College in December, 1899, and came to South Africa as a Civil Veterinary Surgeon (A.V.D.). After hostilities he served in the Repatriation Department, Transvaal, but on October 7th, 1903, joined the Civil Veterinary Division. He died at Durban on July 15th, 1917.

Walter Hill (18 . .-1906). Came to South Africa in the early nineties and settled in Kimberley as a private practitioner. He was employed in the Civil Veterinary Division, Cape Colony, during the rinderpest campaign (1896-1898), and served as a Civil Veterinary Surgeon (A.V.D.) during the Boer War. Joined the Orange River Colony C.V.D. on November 1st, 1905, and died early in 1906 of blood poisoning contracted while conducting a *post-mortem* examination.

William Pye (18 . .-1904). Qualified Edinburgh, June, 1891, was veterinary assistant to Dr. Edington, Colonial Bacteriologist (Cape Colony), for approximately two years prior to settling down in Johannesburg as a private practitioner early in 1896. He was thus the first research veterinarian in South Africa.[37] Soon after arrival in Johannesburg he entered into partnership with E. A. Hollingham. Upon the outbreak of the second Boer War he proceeded to Natal, where, with his former partner, he joined the I.L.H. After serving in the ranks until the Relief of Ladysmith, he joined the A.V.D. as a C.V.S. At the end of hostilities he returned to Johannesburg and resumed private practice. For a few months at the end of 1902 he acted as Government Veterinary Surgeon for Johannesburg under the Glanders Law (8) of 1894, being relieved at the beginning of 1903 by Mr. J. Peddie, M.R.C.V.S. His death took place under tragic circumstances in Pretoria in 1904.

Frederick M. Skues (1866-1921). Born July 9th, 1866, in London. Graduated at the Royal (Dick) Veterinary College in July, 1897, and came to South Africa as a Civil Veterinary Surgeon (A.V.D.) during the Boer War. On September 26th, 1905, he joined the Orange River Colony C.V.D., having served previously in the Transvaal Repatriation Department. During the Great War he joined the S.A.V.C. (November 1st, 1914) and saw service in German South-West Africa. On being released from his military duties he returned to the Orange Free State and died at Bloemfontein on August 18th, 1921.

Ernest E. Stokes (18 . .-1925). Qualified at the Royal (Dick) Veterinary College in June, 1899, and came to South Africa during the Boer War. As his name is not given in the list[38] of A.V.D. Officers (and Civil Veterinary Surgeons), it is likely he was employed on Sea Transport. At any rate, in May, 1902, he was stationed at Potchefstroom. Later it is believed he served in the Repatriation Department and thereafter settled in Port Elizabeth as a private practitioner. On November 2nd, 1914, he joined the S.A.V.C. and served in German South-West Africa, later accompanying the force which in 1917 defeated Chief Mandume in Ovamboland. He died at Port Elizabeth on November 27th, 1925. (*Vet. Rec.*, 20/3/26).

[37] Dr. Edington was appointed to investigate animal diseases in 1891, and no doubt found the various maladies most confusing. At first Mr. Borthwick helped him, but later he obtained a whole-time veterinary assistant.

[38] "A History of the R.A.V.C.," by Sir Frederick Smith (1927). p. 259. Baillière, Tindall & Cox, London.

South African Veterinary Medical Association.

THE following constitute the office-bearers and standing committees of the above Association for the year Easter, 1930, to Easter, 1931:—

President: F. J. Carless.
Vice-President: Dr. P. R. Viljoen.
Hon. Secretary-Treasurer: Dr. H. H. Curson.
Members of Council: Dr. P. J. Du Toit, Colonel J. G. Bush, Dr. J. Quinlan, Dr. E. M. Robinson, Dr. P. R. Viljoen, and Messrs. R. A. Alexander, J. Chalmers, W. H. Chase, J. L. Dickson and A. C. Kirkpatrick.
Finance Committee: Colonel Bush, Dr. Quinlan and Dr. H. H. Curson (Convenor).
Status Committee: Messrs. Chalmers, Fourie and Alexander (Convenor).
Parliamentary Committee: Dr. Curson, Mr. Kirkpatrick and Dr. Viljoen (Convenor).
Editorial Committee: Messrs. Chalmers and Alexander and Dr. Thomas (Convenor).

Tuberculosis in Cattle.

Glasgow Corporation Committee on Markets have unanimously approved the scheme for the eradication of bovine tuberculosis which was presented by the Scottish Branch of the National Veterinary Medical Association.

The Veterinary Record.
September 27th, 1930.

Veterinary Science in South Africa.

This week we have the pleasure of publishing both the Presidential Address of Dr. P. J. Du Toit to Section M. (Agriculture) of the British Association for the Advancement of Science, at its Bristol meeting, and the first instalment of a welcome contribution on "The Veterinary Profession in South Africa," from Dr. H. H. Curson, of the Onderstepoort Veterinary Laboratories.

Dr. Du Toit, who has made a number of notable contributions to veterinary science, and who succeeded Sir A. Theiler in the command of the Onderstepoort laboratories, is Director of Veterinary Services and Animal Industry in the Union of South Africa, and is well qualified to speak of the rôle played by veterinary science in agricultural development. His very clearly-expressed address, which was greatly appreciated by a large and representative gathering, was such as to impress very firmly on his hearers the magnitude of the work which has been accomplished and the value of veterinary science to agriculture.

The address provides very striking evidence of the progress of veterinary science in general, but particularly of its advance in South Africa. The work accomplished at the well-known Onderstepoort station is in particular a monument to Sir A. Theiler, who for many years showed a rare combination of untiring industry with inspiration and breadth of conception. It is also a tribute to his staff, and to the successive South African Governments which have accorded to him what appears to us as magnificent financial support. Perhaps the greatest tribute to the value of the work accomplished is the fact that all responsible opinion in South Africa would agree that the Government expenditure in this direction has been fully justified and well repaid.

The thanks of all British veterinarians are due to Sir A. Theiler, the late D. Hutcheon, Dr. Du Toit, and those other veterinarians (mainly our own graduates) who have helped to raise the veterinary profession to its present position in South Africa. They have conferred great benefits on South African agriculture, and at the same time they have provided convincing proof of the ability of veterinarians, given the opportunity, to develop their own science to the fullest extent and to carry on research of the highest practical value, as well as of the greatest scientific interest.

The lavish Government support of veterinary research and education in South Africa, and the manner in which that support has been repaid, provide an object-lesson for Great Britain, which, in relation to its size and agricultural wealth, has probably done less in both directions than any other civilised country. Modern veterinary education is expensive, and the number of students is necessarily comparatively small, although their importance to the agricultural community, and to the nation, is great. It is quite impossible for veterinary education to be carried on under suitable conditions without substantial aid from the State, and this truth, for a long time accepted without question practically throughout the world, must eventually win recognition in this country.

With respect to veterinary research, probably all of us will agree with the remarks made by Dr. Andrews in discussing the address of Dr. Du Toit. We need intensified research of both the academic and the more practical types; research activities at our universities and colleges should be developed and subsidised, and we certainly should not forget the striking example afforded us by South Africa of the value of properly organised and adequately financed State research.

Finally, we must offer our congratulations to Dr. Du Toit, and express our gratification at the choice of a veterinarian as President of a section of the British Association. We regard this choice as a tribute to the personality of Dr. Du Toit and to the reputation of the Onderstepoort laboratory, but it is also evidence of the recognition by the British Association of the importance and scientific character of modern veterinary work.

We warmly welcome this recognition, and the participation of veterinarians in the work of one of the sections of that great Association. It is now impossible for veterinary science, or any other branch of science, to work in isolation, and collaboration with other branches is not merely of value: it has become essential. While we feel strongly that progress in veterinary science must come mainly by and through the efforts of veterinarians, we also consider that our profession will best effect its legitimate aims, and attain its proper position, by co-operating freely with others, and by taking as active a part as possible in scientific meetings of a broad and general nature.

Clinical and Case Reports.

Leaves from my Case Book.*

By Richard Jones, M.R.C.V.S., Towyn.

Diseased Spermatic Cord and Omental Hernia.

In May, 1927, I had occasion to attend a colt foal for pervious urachus, and in so doing I noticed that the colt had a large scrotal hernia on the near side. I pointed out to the owner that it would be important to have the colt castrated in a special way in order to remedy the hernia. In the following 12 months I was called to attend the same colt. It had been castrated the previous day without any provision having been made to remedy the hernia, with the result that about a foot of the omentum was hanging from the scrotum. I had the parts washed, cut the hanging omentum off, and returned the stump into the inguinal canal. I called to see the colt again a day or two later, and he appeared to be recovering.

In the course of the next 12 months the colt changed hands, but remained in the district. On the 10th August, 1929, I was again asked to see the colt, and found the two cords diseased, with a suppurating sinus on each side. This being the first time upon which I had seen the colt since treating him when the omentum was protruding, I made arrangements to have him sent down to my place to be operated on for the diseased condition of the cords.

I operated on August 14th, 1929. I advisedly call the condition "disease of the spermatic cords" in contradistinction to what is commonly called "scirrhous cord." The swelling in this case was diffused and ill-defined, which made it difficult when operating to know what to dissect so as to be sure to include all the diseased tissue, and, in dissecting, I cut into a well of pus. I eventually, after a good deal of dissection and hæmorrhage, got the diseased cord with tunic intact. I purposely operated on the near (left) side, feeling sure from the history of the case that I would find an omental hernia. After washing the part clean, I opened into the vaginal sac and found a portion of the omentum implicated in the disease at the end of the cord. I cut the implicated portion of the omentum, and returned the cut end into the abdomen. I gave the cord a few twists so as to keep the returned end of omentum in place, and fixed tightly a tarred cord ligature, leaving about six inches of the end of the string to hang out of the wound after the operation. I repeated the same treatment on the off (right) side, and had a large mass of tissue to dissect out before getting at the diseased cord. I got to a well of pus on this side, just as in the other. I did not expect anything besides the cord to be in the tunic, but opened it to make doubly sure before removing the diseased portion of the cord with the écraseur. I found I had cut practically all the contents of the sheath, the septum dividing the scrotum, leaving the penis bare and the anterior and posterior ends of the sheath joined only by a narrow strip of skin each side of the raphé.

The after-treatment consisted of syringing the cavity out once a day. The colt was kept in for about a week, and afterwards turned out and brought in daily for washing. I found in the course of a day or two that the ends of the ligature were getting out of sight; therefore I managed to tie another portion so as to have the ends hanging out of the wound. During the time I had the colt under treatment he did well, and moved about freely after the first week; in fact, so well that he jumped over the fence in order to be with the rest of the horses. I was getting anxious about the ligature and the part of the cord below it coming off. At the end of the month I applied traction to the exposed ends and drew it out. No doubt the swelling had imprisoned it in the canal and it ought to have been off a week or nine days previously had I applied the necessary traction. I anticipate someone remarking that I dissected or cut too much during the operation, but I fall back on this quotation: "The aim of surgery is to cure, and the best means are those that accomplish the best end," and, in this case, the end was satisfactory because the colt (2½ years old) was sold in less than three months after the operation for £45. He was taken home from my place a month from the date of operation.

* Cases presented to the North Wales Division, N.V.M.A., at Corwen, July 11th, 1930.

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Ventral Hernia in a Filly.

A sleigh with four uprights, with an open spaced bottom, was being drawn by a horse through a gateway, followed by an unbroken two-year-old filly. The latter, by some means, got scared and jumped on one of the uprights with her fore feet entangled in the bottom of the sleigh, and must have hung for a few seconds by the loose skin of the flank until the upright had given way from the framework of the sleigh.

On Sunday, February 2nd, a swelling was noticed underneath the filly's belly. She was put into a building, caught and examined, when rupture of the abdomen was suspected. On the following day the owner motored about 14 miles requesting me to see the injured filly and decide whether to slaughter or carry out some treatment. I examined the filly and found that a comparatively large mass of bowels had escaped through the abdominal wall. No wound or abrasion was found on the skin. I decided to operate on the filly, having fortunately taken in the car all instruments, chloroform, etc., necessary to carry out the operation. I set the men to clip the hair off the area of operation, whilst I had the instruments, etc., sterilised. We got the filly out into the field the best way we could, the filly not having previously been haltered or handled in any way. Eventually I had her cast with a castrating rope. Whilst the filly was being chloroformed I had the area of operation thoroughly cleaned and washed.

The injury was on the near side, because the mass of bowels showed from the median line towards the flank. On introducing my hand through the wound I found a rent just in front of the right of the udder, about three inches from the median line. I manipulated the bowel back into the abdominal cavity without much difficulty. Placing four stitches in the abdominal wall, I then stitched the skin wound in the ordinary way, undid the ropes, etc., and got the filly quietly back to her box. She was fed sparingly with a sloppy diet for a week or two, and washed twice daily with antiseptic and water.

I saw the filly on February 5th feeding and looking

bright. Exudation had occurred and there was a cavity formed by the detached skin, which made it more or less impossible to decide whether any bowel had escaped. The next few days decided the matter, because the skin was being gradually drawn up to the abdominal wall, and there was a slight discharge from the wound, but not of an offensive character. I called to see the filly occasionally and found her progressing favourably. March 18th was the last date upon which I saw the filly, when I found indurated cicatricial tissue over the ventral wound and the skin not completely closed, with a very slight discharge. The filly worked all the summer with the harvest.

This is the second equine ventral hernia that I have treated successfully. Strange to say, about two or three months later a yearling colt at a place three miles higher up the valley pushed himself from a field to the yard, and in rubbing himself on the sleigh jumped on one of the uprights, breaking it in the socket, in the middle of the night. The owner observed the scuffle from his bedroom window. I attempted to treat, but found a portion of the abdominal wall torn from the pelvis. I found I could not repair the torn wall, and, with the consent of the owner, destroyed the colt before he got up.

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Urethral Obstruction in a Bullock.

I was called, late on a winter's evening, to see a young bullock about fifteen months old. The owners informed me that the bladder was very distended and no urine could pass. The condition was easily seen by the distention of the urethra just above the ischial arch. I examined the penis carefully, as far as its exit, but could not find anything to account for the stoppage. The beast was in great pain, lying full length, and bellowing occasionally from his suffering. I had administered a good dose of opium on arriving at the farm.

I explained to the owners the state of affairs and informed them that the only way to give relief was to open the urethra over the ischial arch. To this they consented. I made a lineal incision into the urethra, and the urine flowed out freely, giving immediate relief. The bullock was up and feeding within a few minutes.

When I called the next day I found the penis swollen just over the scrotum. The bullock had evidently been gored by one of the herd.

I expected, more or less, that the beast would stretch out to urinate like a heifer, but I was disappointed. The urine flowed over the thighs and legs, the skin becoming inflamed and painful. This was allayed by applying grease to the affected skin.

In the course of a few days I tried to improve matters by inserting a tube into the urethral opening and stitching it to the skin, but this was not a success—it was rubbed off by the tail or against the wall.

Fortunately, the swelling of the penis subsided and urine escaped along its normal course. The bullock was sold in a few months along with the rest of the herd.

The foregoing shows how this operation brings relief to the bladder and, moreover, with comparative impunity.

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Punctured Foot in a Horse.

A nail had penetrated the middle part of the outer wall of the off fore foot, about an inch or an inch-and-a-half below the coronary band. The direction was inwards and upwards, escaping the pedal joint, up to the tissues covering the os coronæ. The accident had occurred a week or nine days before I saw the case. The horse was very lame and in great pain. I ascertained the direction and the part that the nail had penetrated, by inserting a probe. The horse was in such a state that a neighbour tried to persuade the owner to have it destroyed rather than go to any expense on its account. I suggested to the owner that I would have the horse chloroformed the next day and that I would cut down on the point where the nail had penetrated. "Anything to get the horse right and marketable" was the reply.

When I had the foot washed and the horse well under chloroform, I inserted a probe and cut down carefully on to the point where the wound terminated. I was able to ascertain where to make the incision by moving the probe. After swabbing away what little blood there was, part of the os coronæ became apparent in the adjacent fibrous tissue, resembling a star-shaped red spot with small blood vessels radiating from it. I withdrew the probe, and after bending it so as to come out through the incision I had made, I reinserted it, carrying a piece of tape in the eyelet at the other end, through the wound. I knotted the two ends of the tape, leaving it long enough to be moved about to carry the dressing through the wound.

The injured part was washed twice a day with antiseptic water and the tape dressed with tincture of iodine. The horse improved every day after the treatment and its market value was none the less after its recovery.

It transpired that an outhouse had been pulled down, the timber being scattered about the premises, and the nail that did the damage was found, stained with blood, projecting from a piece of timber.

"Before he left his office last evening," says the *Manchester Daily Dispatch* of August 30th, "Lieut.-Col. J. W. Brittlebank, who is retiring from the position of chief veterinary surgeon and "pure milk dictator" to Manchester Corporation, was waylaid by members of the staff and presented with a silver cigarette case as a memento of his 30 years' service with the city.

"Dr. R. Veitch Clark, the City Medical Officer, in making the presentation, said that Lieut.-Col. Brittlebank, in association with Professor Delepine and Dr. Niven, was a pioneer in the movement for pure milk, and had served Manchester to a degree unexcelled by any other individual."

The time is now much overdue when the Ministry of Agriculture should schedule both swine erysipelas and swine fever as notifiable diseases, not only in the interests of those pig breeders who take every care to keep their herds free from infection, but in the general effort to make us more self-supporting in both pork and bacon.—W. H. Scotter in the *Yorkshire Post*.

At Selby a farmer was fined £5 for failing to notify that he had a cow suffering from tuberculosis and a butcher £7 for failing to give notice of its slaughter. It was stated that the cow was bought for £1.

Stoke-on-Trent Watch Committee have expressed the view that the early appointment of a City Veterinary Surgeon is desirable, and a resolution has been passed urging the Health Committee to deal with the matter as early as possible.

Abstracts.

[**New Experiences in the Treatment of Sclerostomiasis and Ascariasis in the Horse.** Gärtner, W., *D.T.W.*, 1930, 38, 20, 305-9]

Sclerostomiasis.

"Sklerostomax" is a sterile copper solution (one per cent. copper content) administered intravenously. It is also claimed for this preparation that it cures the thrombo-embolic processes.

(1) In six colts (six months to one year old) infected with Sclerostomes, treatment with "Sklerostomax" did not cause the expulsion of worms.

(2) No curative effect on thrombosis was observed after the use of this preparation; 35 days after its use thrombosis (with living larvæ) was present in the ileo-cæco-colic artery of a foal.

(3) The injections are harmless and without systemic reaction on the part of the animal.

Ascariasis.

The drug used was "Santostibin," of which no details are given in this article. Apparently these were made known in an earlier publication. It is administered by stomach tube.

(1) The drug is to be recommended. Fasting and purgation prior to its administration are not necessary.

(2) In 18 cases, expulsion of the worms was obtained in 83·33 per cent., and this usually in from one to three days after the administration of the drug.

(3) In 96·3 per cent. of treated animals, the eggs disappeared in from 4-7 days.

(4) Reinfection was the rule, and occurred at the earliest 72 days after treatment. Thus, dosing every two months is to be recommended.

(5) Every effort should be made to prevent this reinfection; this is best accomplished by careful collection and disposal or sterilisation of the fæces.

J. H. M.

[**Streptococci of the Pyogenes Type as Cause of Malignant Mastitis of Bovines.** Seelemann, M., and Hadenfeldt, A., *D.T.W.*, 1930, 38, 23, 35b-6.]

A number of cattle in a herd of 80 head suddenly developed inflammation of the udder with accompanying loss of appetite, fever, cessation of rumination and falling off of the milk yield. This herd had been inoculated in the previous year with an autogenous vaccine prepared with the streptococcus of a chronic mastitis, as this disease ran a mild but chronic course in a number of the cows. In this sudden outbreak, apart from the general symptoms, the affected quarter or quarters were usually swollen and hard with or without accompanying pain, the neighbouring lymph glands being sometimes swollen. The milk was of a flocculent, purulent nature.

A bacteriological investigation of the milk yielded a streptococcus which differed in many ways from that of the chronic mastitis. In size it was much smaller, in broth it formed a deposit which on agitation resolved itself into clumps, whilst the chronic mastitis streptococcal deposit is of a slimy nature; further, the organism was only weakly Gram positive, whilst the chronic mastitis streptococcus is strongly so. It did not clot litmus milk and, of chief importance, it was very pathogenic for mice, guineapigs and rabbits.

Two sources of primary infection were looked for—the attendants and the uteri of the mastitis-infected cows. From the throat of two milkers a hæmolytic streptococcus was isolated, but a complete study has not been made upon it. However, definite evidence of metritis was obtained at *post-mortem* examinations of a number of infected cows (purulent fluid, reddening of mucosa, etc.) and from four of these a streptococcus was isolated having the biological properties of those obtained from the milk. It was possible that these uterine streptococci were the origin of the outbreak of mastitis.

J. H. M.

[**Dibothriocephalus Dividocapitis Nov. Sp.** Yaroslavsky and Solowieff, *B.T.W.*, 1930, No. 19.]

This new species of tapeworm was found in the intestinal canal of an African ostrich during dissection for anatomical purposes. The chief interest lies in the form of the head part (scolex) which is divided into two bilaterally symmetrical halves, each part ending in a large sucker. The entire worm was 54 cms. long and the segments are wider than they are long. The scolex bears much resemblance to a pair of binoculars when viewed from the side. A sharply-defined neck follows the head and the first ten segments are extremely short and cannot be divided separately, whilst those more distal are, as usual, more developed and are easily perceptible as separate units. There were altogether about 200 of them.

Measurements gave the following information:—Scolex 2·56 mm. to 5 mm. wide and 3·65 mm. to 6 mm. long; suckers have a maximum length of 0·81 mm., which figure also represents their extreme width; neck, 1·6 mm. wide; length of segments varies from 0·16-1·67 mm.

A detailed account of the genital system is given, which, together with the character of the sucker, enables the writers to place the parasite in the genus named, but the form of the scolex is of a species as yet new and the authors name it as above.

Seven figures appear in the original article, and these help to give a good idea of the structure of the worm.

J. T. E.

[**A Contribution to the Study of Periodic Ophthalmia of the Horse.** Gmelin and Stock (Ref. in *B.T.W.* 1930, No. 20).]

According to the authors this complaint is due to metastatic infection by way of capillary emboli. In histological examination of affected eyes, some of which were destroyed by several attacks, there were found small-celled diffuse infiltrations on various parts of the choroid. The lens is either destroyed or in a state of fresh inflammation, and it could be observed that the disease process is never at a standstill but continues between acute attacks in a latent manner.

The disease bears much resemblance to rheumatic uveitis of man. Therapeutically iodine has been found to be useless. Atropine with cocaine and adrenaline gives best results as it breaks down the synechia when that is not too strong. The authors suggest that drugs used in human uveitis may give favourable results with this affection.

J. T. E.

Report.

[**National Institute for Research in Dairying.** Annual Report for the Year ending July 31st, 1929.]

The Institute, as the preface to the report informs us, was founded in connection with the University College, Reading, in 1912. It is one of the Research Institutes formed by the, then, Board of Agriculture, as part of its scheme for the development of Agricultural Research. The functions of the Institute are manifold, and may be best summarised by quoting a statement issued by the Ministry of Agriculture: "The functions of a dairy research institute are wide. Within its province are included all questions relating to the production, handling and distributing of milk, and the manufacture of dairy products. These involve the study of the management and feeding of dairy herds, of methods of securing and distributing milk, of the constitution of milk and milk products, of the various activities in the dairy, of the technical processes involved in the making of such products as cheese and butter. The chemist, bacteriologist, physiologist, physicist, the specialist in dairy husbandry, and the animal pathologist are intimately concerned in one or other of the technical questions bearing on the subject. Further, the importance of milk from the human standpoint, and its relation to public health, give a value to dairy research quite apart from its agricultural value."

The report, which is essentially divided into two sections, the first describing its general policy, early work and future aims, and the second setting forth the reports of its various departments, is no less interesting than its predecessors and is a summary of useful work carefully carried out.

The following summary of the general scheme of research given at the end of the first section may well be quoted.

(*a*) The extent to which the intimate chemical composition of the milk is influenced by (1) the soil; (2) the crops; (3) the feeding stuffs; (4) the animal itself (this includes the exact mechanism of milk secretion and the study of the extent to which it can be controlled).

(*b*) The influence of the quality of the milk in the senses mentioned under (*a*) upon the quality and properties of the products made from it.

(*c*) The steps that may be taken so to vary the conditions of manufacture and storage as to secure the best results under all conditions.

(*d*) Although, by careful study of the fundamental facts, it is hoped to eliminate faults, they will for some time to come necessarily take a large part in any programme of dairy research. Their study is valuable in that waste and loss of trade are diminished and the investigation of their causes always involves work of a fundamental character.

(*e*) Since the hygienic condition of milk has a profound influence upon its products, the means of securing the best results in this respect must continue to be studied. Such studies necessitate the investigation of the suitability of dairy machinery of all kinds.

(*f*) The importance of utilisation of by-products in Empire dairying necessitates research into the exact methods of preparing these on an economic scale in order to meet the requirements of those who may use them.

It is gratifying to read that the appeal in last year's report for the appointment of a physiologist has met with such success that the funds necessary to establish a Department of Physiology and to maintain it for the first few years will be forthcoming. Nevertheless, the need for further funds for new buildings and additional income for upkeep is stressed and we can only hope that the appeal again made will meet with the same success as the first.

The Farm.—The report summarises the weather conditions, the condition of the land and fences and mentions improvements carried out on the buildings. We note that last year there were 32 cows in milk and three suckling calves, and that out of 29 cows in milk throughout the year the average milk yield was 9,337 lb. (727 lb. more per cow than that of the previous year) and that 11 cows gave more than 1,000 gallons each against only five in the previous year. The tuberculin test was carried out in October, 1928, when 67 animals were tested with no reactions occurring, while out of 55 tested in April, 1929, one cow and a heifer-in-calf failed to pass the test. These two animals were isolated for fattening purposes. The form of test used is not stated. The acreage of the farm under crops is given with details of each. Experiments were continued in the manuring of grass land with nitrogenous manures and the results given in terms of cow grazing days and milk yield. Tests were also made on the efficiency of different milking machines and the butter fat content of milk was studied, which makes very interesting reading; trials were carried out on the feeding of calves, on milk production under certain systems of feeding and on milk secretion under varying periods of milking. Advisory work was carried out by correspondence, which is now increasing, as also is the demand for lectures to be given. Help was given to public bodies for clean milk competitions, milking trials and so on.

The Chemical Department.—Amongst many experiments carried out was research on typical English milk, the object being to provide material for the exact study of normal milk over a period of some years, the work being done in collaboration with the Dairy Husbandry Department. Estimation of the calcium content of blood samples from cows over a prolonged period is still being carried out and investigations with a view to the prevention of its reduction at the time of parturition are actively being made.

Pig feeding experiments, tests on the disposal of by-products, analyses of artificial cream and separator trials are amongst the activities of this department.

The Bacteriological Department.—Studies were made on the coconut taint in sterilised milk. Bottles of tainted milk were invariably found to contain sporulating organisms, which, however, when cultivated apparently lose their power of sporulation. The reason for this is not clear. The value of the Reductase Test in the control of milk samples received in a large factory and how far it can be considered indicative of the sanitary conditions under which the milk was produced are being investigated. No evidence can be found to show that the results of bacteriological examination of reconstituted milk and cream can be used as irrefutable evidence of the artificial nature of these products when compared with a similar examination of ordinary cream, but incidentally there was no difficulty in distinguishing reconstituted cream from natural by the taste. In an advisory capacity more than 2,500 milk samples have been tested for cleanliness and 870 for keeping

Foot-and-Mouth Disease.

Important New Order by Ministry.

Serum Treatment of Contacts.

An important new Order made by the Minister of Agriculture in connection with foot-and-mouth disease was published in Tuesday's *London Gazette*.

The Order provides that:—

The Minister may, for the purpose of preventing the spread of foot-and-mouth disease, treat with serum as often as may be, in his opinion, necessary any animals which have been in contact with animals affected with foot-and-mouth disease or which have, in his opinion, been exposed to the danger of infection of that disease.

Notwithstanding anything contained in Article 14 of the Foot-and-Mouth Disease Order of 1928 (hereinafter referred to as the principal Order) no animal seized under the provisions thereof shall be moved for any purpose whatsoever from the place at which it is seized except by direction of the Minister or of an inspector of the Ministry.

The Minister may recover summarily as a civil debt the expenses of the execution by him or by an inspector of the Ministry of any of the provisions of the principal Order as amended by this Order from the owner of any animal seized or detained, or from the consignor or consignee thereof, who may recover the same from the owner by proceedings in any court of competent jurisdiction.

An outbreak of foot-and-mouth disease among cattle and pigs on a farm at Bilsdale, Stokesley, North Riding of Yorkshire, was confirmed by the Ministry of Agriculture on Saturday of last week. A standstill order in respect of all livestock for a radius of 15 miles of the place of the outbreak was put into force. The marts immediately affected are Stokesley, Yarm, Northallerton, Thirsk, Guisborough, Pickering, and Helmsley.

qualities as a means of assisting dairymen and others to sell milk of a definite standard of cleanliness.

In connection with the advice given for clean milk competitions, it was found that out of 1,833 samples examined from 191 competitors, the number reaching "Certified" and "Grade A" standard, was somewhat lower than was the case last year, being 51 and 65 per cent. against 60 and 72 per cent. respectively. Low fat content in morning milk, the high temperature of samples arriving at the laboratory, taints in milk and mastitis were all subjects of enquiries. Biological tests to the number of 956 and 87 microscopic were carried out for the detection of tubercle bacilli in milk, but it is not stated what number of these proved to be positive.

A description of the work carried out by the Dairy Department and a summary of papers published during the year under review conclude the report, which we recommend that all interested in dairying should read in detail.

Victoria Veterinary Benevolent Fund.

Meeting of Council.

A meeting of the Council of the Fund was held at 10 Red Lion Square, London, W.C.1, on Wednesday, July 2nd, 1930, when there were present Lieut.-Colonel J. W. Brittlebank (President) in the Chair, Major J. Abson, Professor J. B. Buxton, Professor J. F. Craig, Mr. J. W. McIntosh, Lieut.-Colonel P. J. Simpson, Captain S. Villar, Mr. J. Willet, Mr. W. Jackson Young and Lieut.-Colonel T. Dunlop Young.

The Minutes of the previous meeting held on April 15th, 1930, having been published, were taken as read and signed as correct.

Letters of apology for absence were received from Dr. Bradley, Mr. Gofton, Major Gooch, Captain Rider, Mr. Arnold Spicer (Treasurer), and Major Townsend.

Treasurer.

The Secretary reported that Mr. E. Alfred West had resigned his office as Honorary Treasurer and that, at the Annual General Meeting held in Dublin on June 5th, 1930, Mr. Arnold Spicer had been appointed in his place.

It was resolved "That an expression of the deep sense of gratitude of the Council be conveyed to Mr. E. Alfred West for the great services he has rendered to the Fund as Honorary Treasurer and that this be recorded in the minutes."

Secretary's Report.

The Secretary submitted the following report of new subscriptions and donations received during the past quarter:—

New Subscriptions:—

	£	s.	d.
Lieut.-Colonel J. W. Brittlebank (increase) ...	1	1	0
J. R. Carless	1	1	0
J. H. Carr	1	1	0
I. A. Galloway (increase)	0	10	6
P. Harnett	0	10	6
F. A. Heney	1	1	0
J. F. O'Grady	0	10	6
	£5	15	6

Donations:—

	£	s.	d.
J. H. Norris (Life Member)	10	10	0
W. W. Smart	1	1	0
Mark Tailby	100	0	0
S. de M. Woodward	0	10	6
Arnold Spicer	30	0	0
Collecting Boxes:—			
Central V.M.A. 2 0 9			
Southern Counties 0 12 6			
	2	13	3
	£144	14	9

It was resolved "That the cordial thanks of the Council be conveyed to Mr. Mark Tailby and Mr. Arnold Spicer for their very generous donations."

Life Member.—Mr. J. H. Norris was unanimously appointed a Life Member of the Fund.

Cases.

No. 14. Widow, aged 75, five children. The grant of 10s. per week was continued.

No. 115. Member, aged 65. The Secretary reported that this member had been in employment for a few weeks and that at the present moment was not in receipt of assistance. The case was left in the hands of the Executive Committee.

No. 132. Husband ill and unable to work; three small children. A grant of £1 per week was made in this case.

No. 136. Widow, aged 37, two children. The grant of 10s. per week was continued.

No. 142. Widow, aged 58, no income. The grant in this case was reduced to 10s. per week for the present quarter.

No. 144. Mrs. V. The Honorary Secretary submitted a report in this case and it was decided that no action be taken.

No. 145. Miss B, unable to work owing to illness, aged 54. The Executive Committee reported that they had made a grant of 10s. per week. The action of the Executive Committee was approved and the grant was continued for the present quarter.

No. 146. Miss G, aged 75, invalid, Old Age Pension. A grant of £1 per week was made in this case.

Donations.—The Treasurer was authorised to invest the amount left as balance in the Donations Account.

From The Veterinarian,

August, 1830.

Essays on Horse Medicine.

Of Diseases in the Blood—Humours—Transfusion.

(*Continued from p.* 893.)

This leads me to make a few remarks on

Transfusion,

By which is meant the transmission of blood from the vessels of one animal into those of another. No sooner was the circulation of the blood admitted to be founded in truth, than some febrile imaginations conceived that much benefit might accrue from transfusion.

"The first attempts were made upon animals, and they had complete success. A dog having lost a great part of its blood, received by transfusion that of a sheep, and it became well. Another dog, old and deaf, regained by this means the use of his hearing, and seemed to recover his youth. A horse, twenty-six years old, having received into his veins the blood of four lambs, recovered his strength."

Flattering as these experimental results were, it ought not to surprise us that man himself soon became the subject of a similar trial. "Denys and Emerez, the one a French physician, the other a surgeon, were the first who ventured to try it. They introduced into the veins of a young man, an idiot, the blood of a calf, in greater quantity than that which had been drawn from them, and he appeared to recover his reason. A leprous person, and another with a quartan ague, were also cured by these means; and several other transfusions were made upon healthy persons without any disagreeable result."

However, some sad events happened to calm the general enthusiasm caused by these repeated successes. "The young idiot we mentioned, fell into a state of madness a short time after the experiment. He was submitted a second time to the experiment and he was immediately seized with a *hæmaturia*, and died in a state of sleepiness and torpor. A young prince of the blood royal became also the victim of it; and the parliament of Paris prohibited transfusion. A short time after, G. Riva, having in Italy performed transfusion upon two individuals, who died of it, the Pope prohibited it also. From this period, transfusion has been regarded as useless and even dangerous."

In the face of all this discouraging relation, however, and in human practice too, transfusion has been, *partially* at least, once more revived. And, considering the present improved state of physiology, the improved state of our instrumental means for the purpose, and the hopelessness of the cases in which such an experiment is had recourse to—that of a lying-in woman sinking from hæmorrhage—the practice cannot be censured; on the contrary, from the success which has in several instances appeared to attend it, the trials ought to be accounted highly praiseworthy. As far as the practice has gone, we seem to have obtained possession of one fact concerning it, which is, that the blood should be taken from an animal of the same kind as the one intended to receive it, and from one in full and perfect health.

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Sept. 29th.—Meeting of Editorial Committee, N.V.M.A., at 2 Verulam Buildings, Gray's Inn, W.C.1.

Oct. 3rd.—Meeting of the Scottish Society of Veterinary Inspectors, at the Glasgow Veterinary College.

Oct. 6th.—N.V.M.A. Committee Meetings at 2 Verulam Buildings, W.C.1:—Appointments, 2 p.m.; Veterinary Officers' and Public Health, 2.30 p.m.; Joint Meeting of Veterinary Officers and P.H. and Parliamentary Committees, 4 p.m.; Parliamentary, 4.30 p.m. Special Committee *re* Appointment of Veterinary Surgeons to the Ministry of Health, 5.15 p.m.

Oct. 7th.—N.V.M.A. Committee Meeting, 2 Verulam Buildings, Gray's Inn, W.C.1:—Organising, 10.30 a.m.; Meeting of Deputation *re* Veterinary Advisory Officers, 11 a.m.

N.V.M.A. Council Meeting, 10 Red Lion Square, W.C.1, 2 p.m.

R.C.V.S. Committee Meetings, 10 Red Lion Square, W.C.1.

Oct. 8th.—R.C.V.S. (Examination and Registration).

Oct. 9th.—R.C.V.S. (Parliamentary and Registration). International Veterinary Congress; Organising Committee.

Oct. 10th.—R.C.V.S. (Library and Finance Committees). R.C.V.S. Council Meetings.

Personal.

Marriage.—Tweed-Gittus.—September 16th, 1930, at St. Mary's, Barnsley, by the Rector the Rev. Canon H. E. Hone, William, second son of Mr. and Mrs. W. P. Tweed, Holmlea, Ballymoney, Co. Antrim, and Margaret, eldest daughter of the late Mr. W. B. Gittus, and of Mrs. Gittus, Belle Vue, Barnsley, Yorks.

R.C.V.S. Obituary.

Best, George, Bay View, Hunmanby, East Yorks. Graduated Edinburgh, May 30th, 1891; died September 13th, 1930, aged 62.

In reference to the above, the *Yorkshire Herald*, of September 15th, says:—

" Mr. George Best, M.R.C.V.S., Bay View, Hunmanby, who had been shooting, returned home for lunch and then left the house again, but immediately collapsed and died within a few minutes. Death is attributed to natural causes.

" Mr. Best had been in practice at Hunmanby for many years. He was known throughout the East and part of the North Riding as a very competent veterinary surgeon, zealous in his work and ever ready to do his best when his services were required. During the last few years he had combined farming with his practice. He was for some years hon. veterinary surgeon to the Bridlington and Hunmanby Agricultural Shows, and the loss of such an able man is greatly deplored by the many Yorkshire farmers who knew him. He leaves a widow, three sons and two daughters."

. . . .

Deep sympathy will be felt for Captain J. Fox, M.C., M.R.C.V.S., of the Ministry of Agriculture, in the loss of his wife. The remains left Glasgow by rail for London on the 7th inst., burial taking place at Hendon Park Cemetery, Mill Hill, London, on the following day. The following members of the profession accompanied the cortège to Queen Street Station, Glasgow: Mr. A. M. Trotter, Chief Veterinary Officer, Glasgow; Major McGregor, County Veterinary Officer, Stirling; Mr. T. B. Hamilton, Glasgow, and Mr. A. C. Urquhart, Glasgow, while wreaths were sent by Messrs. A. Holman Berry, A. C. Urquhart and E. R. C. Corrigall.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Research Defence Society.

To the Editor of the Veterinary Record.

Sir,—I wish I could persuade more members of the veterinary profession to be subscribers to the Research Defence Society.

We do not need any large sum, but if we could get two hundred more annual subscribers of £1, it would make our work easier to carry on. We are the only Society that exists to expose the mis-statements of the Anti-Vivisection Societies and agitators. They preach that all experiments on animals are useless, that no good has come from them to man or beast, and that the experiments are grossly cruel.

An uninformed public accept such statements as true, and the only way to get the facts known is by the propaganda of a Society such as ours. But this is expensive—and so I ask the help of those who wish it well.

Yours faithfully,

Knutsford, *Chairman.*
Research Defence Society.

11 Chandos Street,
Cavendish Square,
London, W.1.
September 13th, 1930.

The Double Intradermal Tuberculin Test.

To the Editor of the Veterinary Record.

Sir,—After reading an account of Mr. Glover's observations on the Double Intradermal Tuberculin Test, published in *The Veterinary Record* of the 13th inst., I feel constrained to substantiate heartily the advice there offered as to the interpretations of reactions.

A proportion of reactors do not evince at the injected site a considerable increase in skin measurement, but they do there show a deviation of sensibility, diffuseness and size of swelling, distinct from the non-sensitive, circumscribed nodule seen in the clean animal; provided tuberculin of suitable potency be used and its injection made into the deeper skin layers.

Certain reactors mentioned in the Medical Research Council's Special Report Series No. 94, were of this class, and the adoption of these criteria proved on subsequent *post-mortem* and biological examinations to be sound almost invariably.

It is only by selecting the before-mentioned standard as indicating a non-reaction that the swelling sometimes met with in clinically affected cases can be interpreted as positive and I have felt that tuberculosis, causing as it does such disastrous effects on man or animal, cannot admit of the least deviation from this negative standard being allowed to pass as indicating in the tested animal a freedom from the disease. Furthermore, to formulate any other degree than the alternatives, detracts so much from the test as to render it other than that which it was put forward to be—an advance in the method of tuberculin testing in cattle.

Yours faithfully,

W. J. Leyshon.

The County Hall,
Westminster Bridge, S.E.1.
September 20th, 1930.

Calcium Treatment of Milk Fever.

To the Editor of the Veterinary Record.

Sir,—After perusing the interesting letter, under the above heading, of Mr. W. P. Blount, in your issue of September 20th, I realise that I did not make one point, at least, clear in my article of the 6th inst.

Mr. Blount refers to Case Note 1, describing the occurrence of milk fever in two barren cows fed on boiled food, which had been " dry " for six months, and fails to see how this bears out my statement that " the factor which precipitates an attack of milk fever is an *abnormal* stimulation of the udder cells."

My suggestion is that the sudden change of diet stimulated the formation of hormone in an udder which at the time was not secreting milk. Any tendency towards lactation would be checked by the inhibitory influence of the hormone, with the formation of only a small quantity of a colostrum-like fluid—too slight, in these particular cases, to be recognised. This theory seems more rational than the alternative, that the body was drained of calcium by a non-lactating udder. These are by no means isolated instances; every practitioner in dairy practice must be able to call to mind cases of milk fever occurring both in " dry " cows and also before calving when no milk has been withdrawn. Even when we recognise that the " calcium content of colostrum is markedly higher than that of ordinary milk and therefore allows the greater elimination of the mineral from the body " it is difficult to explain cases occurring in cows from which no colostrum has been removed. Surely the amount of calcium stored within the udder itself in " dry " cows cannot equal the amount withdrawn daily from any cow during the height of lactation.

I am sorry that Mr. Blount should suggest that I wish to belittle in any way the work of the pioneers of calcium therapy. In common with the whole profession, I consider that the recent discoveries regarding the mineral content of the blood are of the utmost importance, not only in connection with milk fever, but also as regards other conditions which we may now view from a wider standpoint. My only hope is that the workers who have achieved such a remarkable success will not be content to rest on their laurels, but will endeavour to fill in the few gaps which apparently still exist between physiological findings and actual clinical evidence.

That a blood-calcium deficiency may produce symptoms of milk fever is a proven fact, but the reason for the deficiency, as yet, is not so easily understood.

Yours faithfully,

Camborne. R. H. Smythe, M.R.C.V.S.
September 20th, 1930.